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A.I.D. DISCUSSION PAPER NO. 14

LIBERAL POLICIES
VS.
CONTROLS IN THE FOREIGN
TRADE OF DEVELOPING
COUNTRIES

C. P. KINDLEBERGER

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C.P. Kindleberger

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April, 1967

Introduction

This paper was prepared for the Office of Program Coordination as part of the 1966 Summer Research Project sponsored by that office. It was based on the various studies of foreign trade sectors conducted by other members of the Project. Professor Kindleberger's summary of his paper can be found on the following two pages. The paper served as the basis of discussion at the October 8, 1966 session of the Administrator's Advisory Committee on Economic Development. The minutes of that session are attached as an appendix.

The other studies which were done on the foreign trade sector for the 1966 Summer Research Project are available on request from the Policy Planning Division, Office of Program Coordination.

SUMMARY

The memorandum is designed to review the case for and against foreign-exchange controls on the one hand, and decontrol and devaluation on the other, in the light of a series of memoranda on foreign trade policies in Brazil, Chile, Colombia, Pakistan, Turkey prepared by AID Summer Consultants.

The "disequilibrium system" of overvaluation and incentives to exports plus controls on imports may have evolved through widespread ineptitude in developing countries, but probably serves an economic function. Incentives to exports take the form of special exchange rates, tariff drawbacks, tax and transport rebates, access to cheap credit, and access to special foreign exchange. These are adjusted between prime and marginal exports. The system usually has some additional special handicaps to exports in addition to the overvalued rate, such as prohibitions to hold down goods significant for the cost of living. A general handicap to exports is the need to maintain surveillance over all export transactions to collect the exchange proceeds to prevent capital exports.

Offsets to imports which are stimulated by an overvalued rate include tariffs, surcharges, special taxes, special rates for exchange, a system of advance deposits.

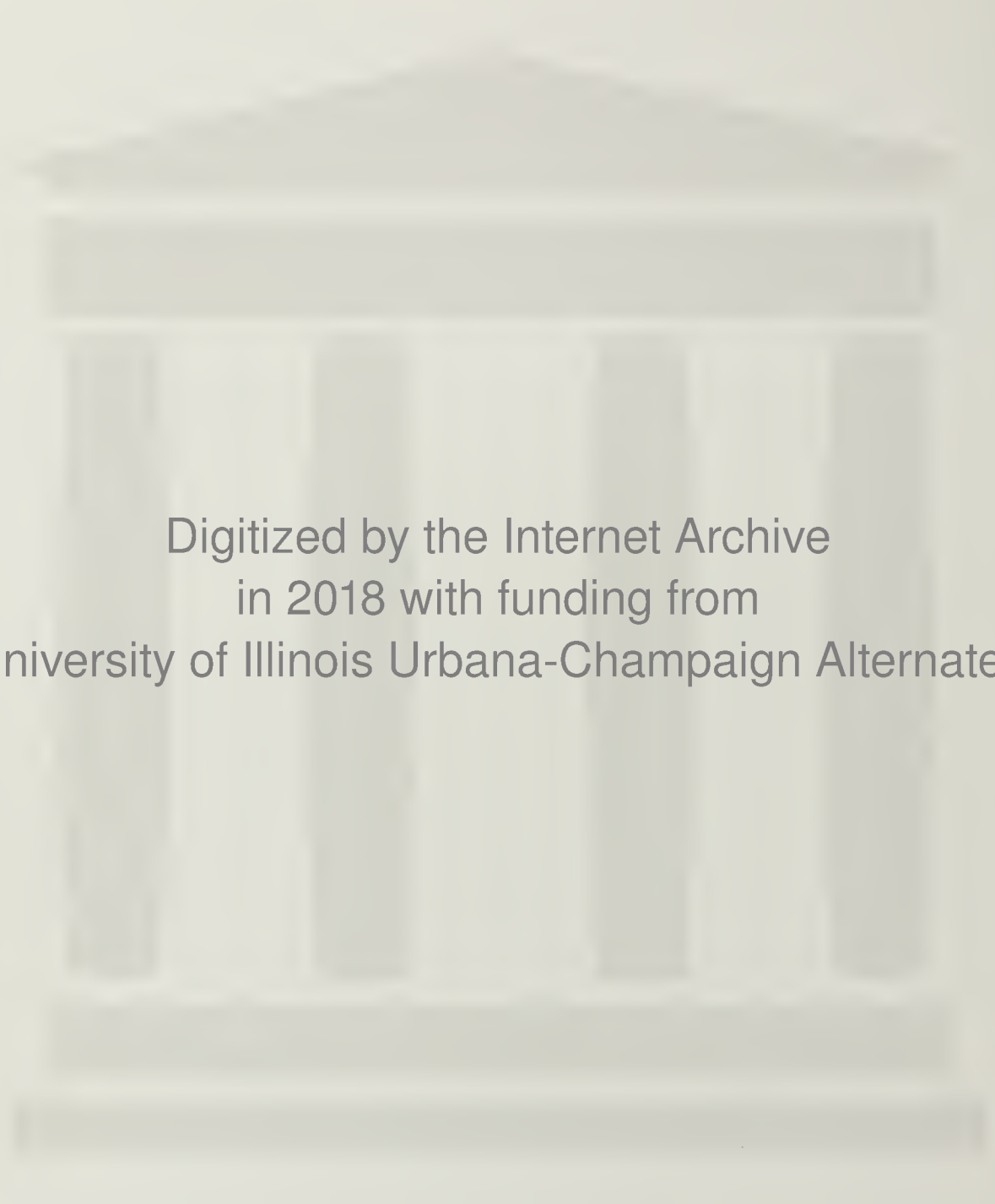
The disequilibrium system is partly justified as an attempt to improve the terms of trade by raising the prices of prime exports. Largely, however, it is the consequence of domestic inflation originating independently of the foreign sector, but accelerating whenever an attempt is made to

cut down on the foreign deficit by devaluation and decontrol. Since supply is generally inelastic, correction of the balance-of-payments deficit requires a cut in expenditure by some group or groups. Each group in defending its level of living contributes to the inflation. The disequilibrium system of successive piecemeal adjustments seems to be more successful in effecting the necessary equilibrium among income groups than thorough-going devaluation and decontrol.

The disequilibrium system has the disability that it discourages exports, wastes resources, tends to lead to an escalation between over-valuation and offsetting measures to expand exports and restrain imports (as inflation continues). But it has a survival value greater than that of any obvious alternative.

A freely fluctuating exchange rate or annual devaluations when domestic monetary and fiscal conditions are not highly stable, seem to have the drawback of accelerating internal inflation, which feeds back to depreciation, sometimes in an explosive fashion. Multiple exchange-rate systems have a short half-life before evasion and arbitrage among the separate rates overtake them and lead to capital export and breakdown.

The hope for a liberal system seems to rest in the once-and-for-all devaluation. The conditions for its success are that domestic supply is elastic, especially of food and other wage goods, that import of intermediate products are made available to permit expansion of products depending upon foreign inputs, and that there be political consensus, or effective political power to enforce a solution, that various groups will cut their real expenditure in some agreed and tolerable fashion. It is doubted whether these conditions obtain currently in India.



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Liberal Policies vs. Controls in the Foreign Trade of Developing Countries

This memorandum is designed to review the economic, but not the purely political arguments for and against foreign-trade controls on the one hand, and trade relatively free of control but at a devalued exchange rate on the other. It is stimulated partly by a question whether the Bank, the Fund, the Consortium and A.I.D. were right in putting so much pressure on India to devalue last spring and partly by A.I.D.'s need for criteria to determine when a country is doing what it should in improving its balance of payments. It leans heavily upon a rather random assortment of memoranda prepared for A.I.D. on the experience of Brazil, Colombia and Turkey by a number of consultants.¹

A wide range of less developed countries operate what might be called a "disequilibrium system" in foreign trade by analogy with what Kenneth Galbraith called the "disequilibrium system" of price controls, materials allocations, and rationing followed by most countries during

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See P.G. Clark and R. Weisskopf, "Import Demands and Import Policies in Brazil," draft of August 7, 1966; N.H. Leff, "Export Stagnation and Autarkic Development in Brazil, 1947-1962" preliminary version, July 1966; A.O. Krueger, "Brazilian Exports: Policies and Potential", dittoed, no date; J. Sheahan, "Imports, Investment and Growth: Colombian Experience since 1950", revised, March 1966; A. Carlin, "Alternatives to the Turkish Import Control System and their Advantages", preliminary draft, no date; A.O. Krueger, "Some Economic Costs of Exchange Control: the Turkish Case", no date; A.C. Harberger and Marcelo Selowsky, "Key Factors in the Economic Growth of Chile", April 1966 (presented at The Next Decade of Latin American Development Conference at Cornell University); see also Richard H. Leftwich, "Exchange-Rate Policies, Balance of Payments, and Trade Restriction in Chile", Economic Development and Cultural Change, Vol. XIV, No. 4 (July 1966) pp. 400-13.

World War II. In a disequilibrium system, prices give the wrong signals for resource allocation but major errors in economic efficiency which would be thereby introduced are offset by direct controls. In foreign trade, the disequilibrium system consists in an exchange rate for a country which is overvalued, given the relationship between domestic costs and prices and those abroad. The attempt is made to correct for this overvaluation, in its impact on the balance of payments and on the allocation of resources between foreign trade goods (exports and import substitutes) and domestic uses, by special inducements to exports and restraints on imports.

It is possible that the disequilibrium system survives in a great many developing countries through faulty economic policy or operational ineptitude. When a phenomenon is so widespread, however, there is a possibility, which must be examined, that the system commends itself to various national authorities, or their constituents, either serving particular ends, or representing a position into which a country can readily drift and to which there is no clearly superior and feasible alternative. In this memorandum, the first section will describe the disequilibrium system, the second will examine reasons for its existence, the third will treat its consequences, and a fourth section will examine various alternatives.

The Disequilibrium System in Foreign Trade

Offsets to export disincentives - An overvalued exchange rate penalizes exports. Where domestic prices and costs have risen, relative to foreign prices, with a fixed exchange rate, there is a strong incentive to divert to the domestic market goods formerly sold abroad or to shift resources altogether out of exports into production of other goods for the domestic market. To sustain the level of exports, or to enable exports to grow in conformity to the growth of the market, it is necessary to counteract the diversionary pressure. A wide variety of devices has been developed for this purpose.

These may be listed as follows:

- 1) special exchange rates for particular commodities;
- 2) drawbacks on tariffs on imported materials or components;
- 3) rebates on income and sales taxes;
- 4) rebates on transport charges;
- 5) access to particularly cheap sources of credit;
- 6) rights to retain for the exporter's use, or to sell in the free market, a portion of the foreign-exchange proceeds of exports. Where the exporter uses the foreign exchange himself, this is often combined with 2) above, so that he is permitted to import materials or components on a duty-free basis.

Some of these concessions approach normal practice in an equilibrium system: i.e. the rebating of cascaded sales taxes on exports (and their addition to imports). This is of course an implicit depreciation of the rate of exchange. But all six devices can be thought of as equivalent

to depreciation. Where a special rate is given, or a tax concession which is made up by a countervailing levy on importers, the system approaches a simple devaluation, despite its cumbersome features. But where the exporter is given concessions on imports, credit or transport, the distortion of resource allocation occurs at the expense of other importers, borrowers, or shippers, or involves an undue drain on the resources involved. To give exporters special rights to import at an overvalued rate, for example, encourages them to substitute foreign machinery for domestic labor.

While it is possible to calculate an implicit average exchange rate for these offsets, and Miss Krueger has done so for Brazil within certain limitations, there is a wide dispersion about the averages, since in the usual system different offsets of varying amounts are allowed for different goods. The attempt is made to hold the exchange rate high for goods in inelastic foreign demand, and to provide a subsidy to marginal products which would not be sold at the average rate. To the extent that various interests can make the case that the authorities have calculated wrongly, or to the extent that renewed bouts of inflation further raise domestic costs and prices relative to the rest of the world, changes are required in the separate devices for offset. Under the normal fixed exchange-rate system, costs and prices are in flux and change in response to various macro-and micro-economic forces. In the disequilibrium system, there is continuous change in controls as well.

Not all governmental action taken in relation to exports is designed to compensate for the overvaluation of the exchange rate. Some is called for by the operation of the disequilibrium system domestically; some is part of normal taxation; and some is the surveillance required of trade under a disequilibrium system to ensure that under-invoicing of exports and over-invoicing of imports do not enable foreign traders to speculate against the overvalued domestic currency and export capital needed at home. India forbade the export of peanuts and peanut oil in an effort to hold down the price of oil to the consumer. The Brazilian government restricted the export of castor beans to assist the development of castor-bean processing in the country. Export taxes are levied partly for revenue, partly in an effort to raise the export price and improve the terms of trade, but in either case they reduce export values to the extent that the foreign demand curve has an elasticity greater than 1 over time. Perhaps the greatest interference with exports under the disequilibrium system, however, is the necessity to supervise each transaction to ensure that it is not being used for capital exports. Foreign-exchange control systems have an efficiency which varies with the degree of overvaluation on the one hand, which creates the inducement to cheat, and the discipline of the public and incorruptibility of officials on the other. The discipline and incorruptibility are functions of national character in part, but also of the national purpose and the length of time the system has been submitted to strain.

It is impossible to measure the efficiency of exchange control, but it has been suggested that the most efficient system ever operated, that of Nazi Germany in the 1930s, never collected better than 90 percent of the proceeds of exports, and the ordinary control of the ordinary developing country would do well to reach 75 percent. But these are wild guesses at best.

Offsets to Import Incentives

The overvalued rate stimulates imports by making foreign goods cheap relative to domestic goods and factors. To counteract this incentive there exists a wide spectrum of devices ranging from outright prohibitions of certain types of imports - relied on heavily in Turkey - to establishing quantitative limits or setting some financial penalty. The quantitative limits approach the financial constraint when licenses to import a limited amount of a good are auctioned off. In the normal case, however, the licenses are distributed through some rationing system, and afford substantial rents to those who obtain them. Tariffs, surcharges or special taxes, like the auctioning of licenses, capture the scarcity value of the right to import for the government.

One favorite device for limiting underpriced imports is to require the purchaser to deposit the purchase price long in advance with the exchange authorities. This converts the constraint in part or whole into one of access to credit. Differential tariffs, taxes or surcharges may distort relative prices in the developing country from those in world

markets. In Argentina, for example, there are seven lists with different rates of surcharge ranging from List 1, with none; 2, 20 percent; 3, 46 percent; to 6B, 172 percent; and list 7 with 230 percent.

The disequilibrium system is not necessarily an alternative to currency depreciation and liberal trading in foreign exchange. Most developing countries have both controls and depreciation, with the stimuli to exports and the penalties on imports insufficient to balance the demand and supply of foreign exchange at overvalued prices. The result is depreciation, and a continuously changing system of controls.

Reasons for the Disequilibrium System

The disequilibrium was not designed; it grew as one and another developing country underwent inflation with a fixed exchange rate. In part, the developing countries rationalized a messy system of international economic relations with the Prebisch notions that it is impossible to grow by means of exports in the twentieth century, in contrast with the 19th, that the terms of trade are moving against primary products, and that import substitution is the road to growth rather than export expansion. Primarily, however, it was found to be difficult if not impossible to halt the inflation given the needs of government, business, and households, and the inadequate supply of savings; nor was it obvious that devaluation would succeed in limiting expenditure to output plus capital obtained from abroad, since no domestic group whose real expenditure had to be cut would fail to see through the device of raising foreign-trade prices while leaving their money income unchanged.

The debate over whether inflation in the less developed countries is monetary or structural is largely beside the point. To the extent that government, business or households maintain their spending through increased loans when the prices at which they buy rise, it is appropriate to call the inflation monetary. Certainly, no set of monetary authorities, whether central bank or Treasury, seems to be able to withstand the demand for credit in the face of rising prices, given unstable governments and strongly organized interests. The structural-inflation analysis fits Latin America perhaps better than India or Turkey where extra spending spilled over into imports rapidly without raising prices sharply. In Latin America, the extra burdens imposed by development were shifted from sector to sector by successively rising farm prices, wages, taxes, and industrial prices before spilling over into reduced exports and increased imports. There was no substantial group which was unable to defend itself against a cut in absorption, and none with money illusion which prevented it from seeing through the rise in prices.

For devaluation to be effective there must be a substantial increase in output in response to the new set of relative prices - an increase which is greater than the rise in consumption which accompanies it, or there must be a reduction in expenditure. A large increase in output of exports or import-competing goods resulting from elastic supply schedules and higher prices for exports and imports after devaluation would avoid the necessity actually to reduce expenditure of any group or groups, so

long as expenditure rose less than output. It would further limit the rise in prices, and the decline of real income of fixed-income sectors in the economy. Such increases in output may occur if there are unemployed or underemployed labor and capital and no foreign-exchange bottleneck limiting the purchase of foreign components or materials. In the usual developing-country case, however, there are serious limitations on capacity to expand output, because of inelasticity of supply in agriculture or because of limitations on imports of components and materials. Where such is the case, devaluation must rely almost entirely on cutting the expenditure of some group, and this is strenuously resisted.

Some economists, notably Machlup and Sohmen, argue that an increase in real income can be obtained from more efficient resource allocation, even when there are no unemployed factors. Theoretically this notion encounters the difficulty that measurement of real income is subject to the index-number problem with prices changed after devaluation. More practically, devaluation under conditions of full employment is successful when the rise in foreign-trade prices shifts income from spenders, i.e. typically labor, to savers, primary-product producers and industrialists producing import substitutes. Alexander tends to dismiss income-redistribution along with money-illusion and the Pigou effect (which induces individuals to save when prices rise in order to restore the real value of their savings). In my judgement, based on Diaz-Alejandro's study of the Argentine devaluation of 1958, and observation of the French devaluations of 1946 (unsuccessful) and 1958 (successful), devaluation under full employment

succeeds or fails depending on whether or not the income redistribution can be made to stick. If the groups who lose by devaluation increase their spending through credit or by raising administered prices, all prices and incomes are quickly raised by the percentage of devaluation and the balance of payments is not improved.

If some groups would be hurt and some helped by devaluation, it follows that some groups gain and others lose from the disequilibrium system and the vitality of the system can be explained in terms of the political power of these groups. Importers, for example, who buy at world prices and sell at high prices owing to the scarcity of import goods created by the controls, may like the system, as may the regulatory agencies. Ford has observed in Argentina at the end of the 19th century, that the political power of export interests led that country to adopt a fluctuating exchange rate when world prices were falling, and the gold standard when they were rising. Today, export interests tend to have lost political power in the less developed countries whereas industry gains from limited access to cheap imports on the one hand, and high domestic prices for import-competing goods on the other. In some countries, such as India, the industrial importing interest may be governmental. Government has another parochial interest in overvaluation to enable it to pay foreign debt service with the least amount of local currency. Similarly, where foreign investors are permitted to transfer profits at the official rate - profits which are maintained at a high level by

reason of the limits on imports - it is obvious that they have an interest in the disequilibrium system, although it is doubtful whether they exercise a significant pressure for its maintenance.

Where domestic output can be expanded, especially in items which bulk large in the cost of living, such as food and textiles, the chances of success in devaluation, are substantially improved, as already noted. There is also a possibility of holding down the prices of wage goods through imports. This would involve running an increased deficit in the short run, in order to reduce it over time. But there is another case where imports must increase before they can be reduced, and this is where domestic production and production for exports depend significantly on intermediate products - components, raw materials and fuel imported from abroad. Where there is a foreign-exchange bottleneck, rather than a lack of overall savings, devaluation requires expansion of at least certain kinds of imports and possibly an increase in the deficit as a transitional matter after devaluation. Where there is doubt whether the increased imports can be financed under a liberal system, the argument for controls is improved.

One of the most widely-used arguments in favor of the disequilibrium system is that it enables the developing country to exploit its monopoly advantages to the full. Devaluation followed by expanded output of primary export products would worsen the terms of trade, because of the inelasticity of foreign demand. The overvalued rate holds up export prices and receipts, reduces the trade deficit, and improves real income. Multiple-

exchange rates, or differing rates of subsidy and tax on exports and imports enable a country to optimize its gains from trade. This argument, however, is readily answered with the reply that it is possible to impose export taxes equal to the degree of depreciation, and thereby to retain the monopoly advantage of high export prices to foreigners in goods in which the country is dominant.

A distinct reason for the disequilibrium system operated in New Zealand is to provide employment. Since this is a rich, if not a highly developed country, the case is perhaps primarily of intellectual interest, but it should be included in a complete statement. Best practice in sheep and cattle-grazing and dairy farming is land-intensive, with only limited employment opportunities. To maintain its population of 2 1/2 millions, New Zealand governmental authorities are persuaded that they must maintain import controls on manufactures and encourage labor-intensive, import-competing industry. They recognize that this involves a trade-off of efficiency against employment opportunities, but are prepared to slow down the development of exports and imports, and limit the possible gains from trade, in exchange for a higher population engaged in relatively inefficient industry. What is remarkable about the New Zealand case is that brimful employment - with job vacancies vastly in excess of the handful of unemployed - and import controls produce so little in the way of inflation. The prices of home goods have risen only from 100 in 1958 to 111 in 1965. It appears that industry and labor are neither very aggressive in raising prices under conditions of great shortage

A final argument for the disequilibrium system is that devaluation is likely to exert upward inflationary pressure in a way that the disequilibrium system does not. In effect, this implies that sector incomes can be reduced by a series of direct controls with public acceptance, while the sectors hurt by devaluation would react vigorously against it. Partly the case is made that direct controls enable the authorities to impose sacrifices in a more quitable fashion, for a given balance-of-payments deficit or surplus, partly it rests on the view that the disequilibrium system develops through myriad separate steps, no one of which is sufficiently harmful to a particular interest so as to lead it to react strongly, whereas devaluation as a single, discrete, and far-ranging act tends to attract opposition. The analogy is with piecemeal tinkering with the tax system, rather than the once-and-for-all major reform which, in reaction to Nicholas Kaldor's proposals for tax reform, led to riots in Ghana, British Guiana and India. The disequilibrium system enables the authorities to simulate money illusion, in this view, whereas the public would see through the redistributive effects of devaluation.

These then are the main rationalizations for the disequilibrium system. On the external front it survives because countries typically cannot finance the additional imports of intermediate products necessary to expand production of exports and import-competing goods. On the domestic front, its persistence is the result of the greater political ease (as a rule) of taking many little steps rather than one big one of far-reaching effect on the several income groups in the economy.

Consequences of the Disequilibrium System

Stagnant exports - It seems to be a clear result of the disequilibrium system that exports stagnate. The phenomenon is usually explained by the less developed countries along Prebisch lines, as the result of low income elasticities, the substitution of synthetics for natural products, protective policies in the developed countries, etc. It is difficult to make the case stick. Benjamin Cohen and Manmohan Singh have independently demonstrated that the growth of Indian exports has been slower than that of the demands for its major products.² The result has been a reduction of the Indian share of its export markets. Similar export stagnation is found in Argentina, Bolivia, Brazil, Ceylon, Chile, Colombia, New Zealand, Turkey, etc., which operate this sort of system.

Theoretically, of course, it is possible for the various subsidies and special arrangements for exports to compensate for the depressing effect of overvaluation. In practice, however, the record seems to demonstrate that this is seldom achieved, and that the disequilibrium system tends to lead to export stagnation. Both Miss Krueger writing about Turkey, and Harberger and Selowsky on Chile have observed an increase of the real rate of exchange in recent years, i.e. the (or a particular) exchange rate divided by the domestic price level. Government seems to have a propensity to substitute import restrictions for exchange depreciation, with deleterious effects on exports.

²B.I. Cohen, "The Stagnation of Indian Exports, 1951-1961, "Quarterly Journal of Economics, Vol. LXXVIII No. 4, (November 1964), pp. 604-20; M. Singh, India's Export Trends and the Prospects for Self-Sustained Growth, Oxford, Clarendon Press, 1964.

Waste of resources. The disequilibrium system leads to waste of resources in a variety of ways. The most obvious, perhaps, is that resources engaged in producing import-substitutes could produce more of the same goods if they were engaged in export industries and the proceeds of foreign sales were used to purchase the goods from abroad. This assumes, of course, that the demand for exports is elastic with respect to price, and that incremental exports would not reduce foreign exchange earned. Such is not the case for certain major exports, like tea from India, or coffee from Brazil. But for lesser exports it is certainly true. Miss Krueger's attempt to estimate the loss quantitatively for Turkey rests on the somewhat dubious assumption of constant costs, which equates average with marginal costs. It happens, of course, with upward-sloping supply curves, that resources can earn the same marginal return in exports and in import-competing lines - the test of equilibrium - but at the same time a given batch of resources would earn more on the average in exports than in imports. Despite this possible defect, Miss Krueger's study helps to demonstrate the waste of resources in moving away from static comparative advantage, with widely differing average costs in export and import-competing industries.

An argument can be made that import-competing lines are more productive than exports on a dynamic basis, whether because of economies of scale, long-run risk factors, or price instability. This will of course be true in particular cases. But the presumption is otherwise, when tariffs, surcharges, special taxes and prohibitions are required to restrain imports.

There are other wastes than those involved in the allocation of resources to relatively inefficient industry. One is the need to maintain high inventories when imports are subject to an arbitrary and uncertain control. Another is the apparatus of control in the government, and of personnel maintained by industry to conduct trade in the face of that apparatus. But the most serious waste seems to be that resulting from the distortion in the relative prices of imported equipment and domestic factors. To the private firm it looks profitable to substitute foreign capital for domestic land and labor. A planning office may have a set of shadow prices for foreign exchange and labor, in which the price of the former is well above market, and that of the latter, much below. But firms operate as a rule with market, rather than shadow prices, which lead to overly capital-intensive techniques being employed in countries with excess labor and capital deficiencies.

Finally, of course, there is the loss of foreign exchange through capital exports, illicit expenditure on prohibited goods, and a certain social toll in the corruption of public and bureaucracy alike.

Escalation - Inflation is a way of life in many of the developing countries. The question is not whether there will be inflation or not, but how much. Albert Hirschman has suggested that inflation is basically a political phenomenon, and a means whereby the various sectors which have difficulty in agreeing on the distribution of income evade and postpone that decision in a stylized fashion.³ As inflation proceeds, the pressure

³A.O. Hirschman, Journeys Towards Progress, New York, Twentieth Century Fund, 1963.

to maintain exports and restrain imports have to be built up. This leads to more and more complex interference with the market.

Finally the system becomes so distorted and complicated that there develops an interest in starting over again, and replacing the disequilibrium system with devaluation and decontrol. Colombia devalued in March 1951, June 1957, March 1960, November 1962 and September 1965. The Brazilian cruzeiro has been devalued from 138.5 to the dollar in 1958, to 205 in 1960, 379 in 1961, 475 in 1962, 620 in 1963, 1850 in 1964 and 2,220 in 1965 (with a higher rate, ranging from 37 in 1958 to 939 in March 1966 for coffee exports). But devaluation fails to cure anything unless the inflation is stopped, and the devaluation tends to restimulate inflation. So the disequilibrium system proceeds as a rule, with the exchange rate depreciated in successive steps. Controls are taken off, but they are soon put back. All that devaluation buys is time. Whether the escalation picks up speed or not will differ from case to case, and a wide range of possibilities of course exists. In Brazil, Chile, Colombia, Turkey, and perhaps prospectively in India, however, the disequilibrium system is both impossible to operate effectively and impossible to abandon.

Alternatives to the Disequilibrium System

Freely Fluctuating Exchange Rate - The liberal or perhaps libertarian solution for developing countries with continuous inflationary pressure is a freely fluctuating exchange rate. Its purpose is to ensure that the internal depreciation of the currency is matched by external depreciation so that the balance of payments will stay in equilibrium. Instead of domestic

inflation leading to overvaluation, escalating controls, devaluation to an equilibrium level and more inflation to repeat the process, the thought is that the exchange rate will remain in equilibrium as inflation proceeds, with continuous depreciation, no controls, and balance-of-payments equilibrium.

Not only is the freely fluctuating exchange rate listed by economists of all persuasion, and recommended by the liberals, it has been tried. Chile allowed its rate to float from 1878 to 1925, and Leftwich for one is disposed to regard the experiment as a success. The balance of payments stayed in equilibrium. Domestic inflation and exchange depreciation proceeded, to be sure, but the foreign-trade sector did not suffer great distortion.

Economic theorists suffer great frustration because of the continuous rejection of freely fluctuating exchange by practical authorities. The reason, in my judgement, is that the implicit model of the freely-fluctuating exchange system which the theorists have in mind is usually overly simple. The model typically assumes no capital movements, or only capital movements of a stabilizing character; and that the rate of domestic inflation is independent of the position in the foreign exchanges. Moreover, it fails to take account of the need for a stable unit of account of some sort in long-term contracts. Under conditions of continuous internal inflation and external depreciation, if they could be run in neat parallel with no under- or overvaluation, it is likely that debt contracts would

made in foreign exchange, real commodities or local currency deflated by a price index. In this circumstance the adoption of a free fluctuating exchange rate implies the abandonment by the local currency of much of its monetary function and the necessity to find substitutes.

The Chilean experience from 1878 to 1925 was not so successful that the country clung to the freely fluctuating exchange standard. In 1925 with a far-reaching monetary reform, the peso was stabilized on a gold-exchange standard. With the help of borrowings in New York, this lasted until 1931, since which time Chile has maintained a "managed exchange rate," i.e. the disequilibrium system. The attempt to stabilize the currency at a newly depreciated level in 1959, after a change of government, failed because of inability to stop the inflation. Leftwich concludes innocuously that fixed exchange rates are not compatible with continuous inflation.

But exchange depreciation may stimulate inflation in a country uneasily poised on the verge of financial stability. A freely fluctuating exchange rate is not necessarily an equilibrium one. With capital imports, the rate tends to be overvalued and to retard inflation with the help of an import surplus. With capital exports, however, undervaluation will accelerate domestic inflation. The managed exchange system evolved from attempts to cut off this extra source of inflationary pressure. Harberger and Selowsky's recommendation that the Chilean real rate of exchange be lowered, i.e. that the country move from systematic overvaluation to undervaluation, or at least a substantial reduction in overvaluation, fails to consider the impact this would have on domestic inflation and the possibility of its acceleration.

In continental experience after World War I, exchange depreciation fed back and accelerated inflation leading ultimately to monetary collapse. It was on this account that the countries of Europe after World War II adopted the disequilibrium system of overvalued currencies and controls. After domestic inflation was gotten in hand, with aid from the United States, the external controls were dismantled. The difference between this experience and that of the developing countries - apart from a few like Greece, Taiwan, Peru, etc. is that the internal inflation in developing countries is not brought under control. A freely fluctuating exchange rate, however appropriate for a country with stable monetary conditions, adds fuel to the inflation where domestic financial discipline is lacking.

Moreover unless foreign traders can be relatively certain that the external and the internal depreciation of the currency will run in parallel, they may be unwilling to commit resources to exporting over the long run. Foreign trade is not conducted deal by deal, as profit opportunities present themselves signly. Investment is needed in transport and storage facilities, in marketing connections abroad, as well as in productive capital. The payout of such investments covers a span of years, and entry is not likely to be undertaken under conditions of great uncertainty.

The point is readily made that the disequilibrium system fails to provide the certainty needed for long-term allocation of resources to exporting, and indeed it is frequently said that the uncertainty merely takes different forms, residing less in the exchange rate and more in the

controls; regulations governing foreign trade, and in domestic costs and prices as affected by inflation. This is true. But there may be something to the view that where the authorities of a country are trying to hold down inflation and hold up the exchange rate, there is a little greater possibility-admittedly not much - that the investor can plan on relative costs and prices at home and abroad over the necessary time horizon. In general both the disequilibrium system and the freely-fluctuating exchange rate discourage foreign trade and therefore involve a departure from comparative advantage. But where domestic inflation and the exchange rate are left to fend for themselves with no attempt to hold them in check, the uncertainty, and hence the penalty to investment in foreign trade, may be somewhat greater.

Multiple Exchange Rates - A multiple exchange-rate system is akin to a system of taxes and subsidies on exports and imports. As such it can be operated for a variety of different purposes, assuming appropriate knowledge of the elasticities over the appropriate time periods and a system of surveillance which prevents arbitrage among the different rates. The system could be run to maximize government revenue, to achieve optimum gains from trade, to provide varying degrees of protection to import-competing industry, to maximize employment, etc., etc. But it requires the various markets to be held separate, in the face of the incentive of exporters to sell at the highest rate, and importers to buy at the lowest. The difficulty of effecting and maintaining this separation of markets is what leads as a rule to consolidation of a sophisticated system of many rates into just two, the official rate which penalizes exporters and favors

importers, and the free rate which clears the rest of the market, much as under the freely-fluctuating exchange system. It is still necessary to prevent exporters of goods in which the country has a monopoly - tea and jute in India, coffee in Brazil, copper in Chile - from selling at the free rate, and importers of luxuries from acquiring exchange at the official price. All the exchange obtained from monopolized exports must be collected, and access to exchange at the official rate must be limited to essential imports. The task is easier with a two-rate system than with a dozen.⁴ It still doesn't work very well.

A multiple exchange-rate system is a contest between the ingenuity of the market and the defensive skill of the authorities. The market always wins in the long run. The half-life of the game, moreover, is probably declining as the moral exhortations which introduce the system fall on deaf ears and officials running the controls are worn down by bribery and corruption. In periods of patriotic fervor, as in war, or under the stress of an emotional dedication to national objectives of development, the efficiency of the system can be raised. It works better for disciplined people like Scandinavians, and worse for more individualistic temperaments, like the Latin. But over time, it always deteriorates.

In effect, the multiple-exchange system in its various forms, is merely a particular version of the disequilibrium system, a version which

⁴Edward Holland tells me that Venezuela decided in favor of its last consolidation of a multiple-exchange rate system into a single depreciated rate when it was calculated that the loss of government revenue from the difference between the buying and selling rates would be broadly made up by the 70 percent corporation tax on the higher profits of exporters selling at the depreciated rate.

is more logically consistent, than one with additional surcharges, prohibitions, subsidies, entitlements and deposit schemes, but a disequilibrium system nonetheless. One particular version of the multiple exchange-rate system, that of a fixed rate for exports, and an auctioning off of the resultant exchange proceeds is highly thought of by some economists. This has a strong revenue effect. But it poses the same problems as any others: how to isolate the exporters from the importers, so that they do not trade with each other at rates more favorable to the importers than the auction rate. The pressure to arbitrage is there. As a rule, it wins.

Successive Devaluations, perhaps annually - Clark and Weisskopf have suggested that if Brazil manages to restrain the rate of inflation to 10 to 25 percent a year, it should maintain the positions of exporters and import competitors by a series of discrete devaluation approximately annually, "timed in relation to the cycle of wage and price adjustments". This seems almost a counsel of despair. It is, in effect, a form of the freely fluctuating rate, but one without the possibility of decontrol.

Continuous inflation and sporadic depreciation would quickly lead to destabilizing speculation, with exporters withholding the proceeds of exports and anticipating the exchange requirements of imports. If the successive devaluations went further than inflation to produce an undervalued rate and an export surplus, there would still be difficulty in collecting it, given the likelihood of devaluation in future. Moreover the undervaluation would give a fillip to inflation. If devaluation went only to the equilibrium rate, persistent inflation would make the rate overvalued shortly.

If inflation cannot be corrected, there is probably no choice but to operate a disequilibrium system using a variety of devices to offset the incentive to import and the reluctance to export. Devaluation is desirable when there is a pause in the inflation, though it must be recognized that the devaluation risks a renewed bout of price increases. But to incorporate devaluation as a regular process seems likely to lead, like the freely-fluctuating exchange rate, to an explosive degree of domestic inflation.

One variant of the policy of a freely fluctuating exchange system, or regular devaluations, is advocated by Harberger and Selowsky as a means of promoting export expansion. It is the announcement by the authorities, publicly and explicitly, of an intention to maintain the "real exchange rate" at a certain level, or within a certain range. The real exchange rate calculated by these authors is a particular Chilean exchange rate, the banking market spot rate, and not the banking market futures or the brokers' market divided by the price index of home goods. Difficulties of selecting the appropriate exchange rate and price level may be ignored, as well as the lack of allowance for movement in foreign prices. The critical issue is whether it is reasonable to introduce a new exchange rate assuming other things equal, or whether overvaluation restrained the rate of inflation and its removal would accelerate it.

Once-and-For All Devaluation - The effort should be to curb domestic inflation and to undertake a single devaluation which permits decontrol. Miss Krueger has suggested that this devaluation should go beyond the equilibrium rate to an undervalued level, and be combined with export

taxes on the items in which the country had a strong market position. As the short-run inelasticities gave way to longer-run high elasticity, the export taxes could be reduced to assist exporters in maintaining their volume. Apart from this device for preventing worsening the terms of trade, the devaluation would be accompanied by decontrol.

Conditions for a Successful Devaluation

The familiar condition for devaluation to improve the balance of payments by means of exchange depreciation is the Marshall-Lerner condition that the sum of the elasticities of demand be greater than 1. This assumes, as is well known, infinite supply elasticities, a balance of trade of zero, and the absence of controls. When supply elasticities are less than infinite, the sum of the elasticities of demand can be less than 1, as Hirschman has pointed out. If the initial condition is a large import surplus, the geometric balance of trade is always improved even though the arithmetic balance may be worsened. If devaluation is substituted for controls, domestic prices may actually decline, rather than rise, as a more efficient means of preventing an import surplus is substituted for a less efficient.

The elasticities of demand cannot be ignored, and the use of export taxes to replace overvaluation on goods where foreign demand is highly inelastic has been mentioned at various places above. It is important to recall, however, that the elasticity of net demand for the exports of a devaluing country is not the same as the elasticity of demand for the commodity. The difference is the elasticity of supply in potential com-

petitors. By holding up the price of coffee, Brazil and Colombia encourage output in East Africa; and the same is true of India in tea. Over the longer run which allows time for foreign competitors to enter into production, therefore, the demand elasticity for the exports of a particular country is higher than the demand for the product as a whole.

Inelasticity of domestic supply may lower the tolerable demand elasticities in the Marshall-Lerner condition but is otherwise only harmful. For marginal exports, it is obviously important to expand output. To limit the rise in prices of imports, it is desirable to have a high supply elasticity of import-competing goods.

A number of writers, such as Sheahan, have pointed out the importance of an elastic supply of foodstuffs. If food is exported or imported, devaluation tends to raise its price, but a high supply elasticity holds it down. An increase in food prices - or in the price of any other important wage good, such as cotton textiles, makes clearer to consumers the reduction in the level of living required by devaluation, and reduces the chances of maintaining money illusion. Where food supplies are supply-elastic, because of a margin of unemployed resources, the task of subtracting from the economy the goods needed to fill the balance-of-payments gap is much easier.

As already indicated, many of the less developed countries depend on imports for intermediate goods important to their development programs. Where the foreign-exchange gap is more important to development than domestic savings, devaluation should expand exports rather than reduce

imports, and raising exports may require still more imports. The balance of trade may have to get worse before it can improve. In these circumstances, a devaluation may require foreign aid in the form of loans or grants, or reserves which the country is willing to draw down, before it can expect devaluation to work.

If loans, grants or reserves are available, and the domestic supply of wage goods is inelastic in the short run, but elastic over time, it may be useful to increase imports of wage goods such as food in the short run to hold down the loss of real consumption during the period needed to expand output. The added imports hold down the price rise needed to stimulate production, and so detract from the necessary incentives. At the same time, they undermine the inflationary pressure from groups resisting a cut in real income.

Among the most elusive of the conditions for devaluation to succeed is what Sheahan calls "ambiente", i.e. political calm. This can take a number of forms. It can be imposed from the top, as in the 5th Republic of President deGaulle, which devalued in 1958 at the expense of the laboring classes which were politically and economically powerless to resist. There can be a consensus that it is necessary to take action to cope with the balance of payments, and all groups in the society must bear a share of the burden. Or the groups that suffer a loss in real income can be obtuse, i.e. suffer from money illusion, and fail to push for higher wages or higher prices because they are not quite aware of what is happening to them. The chances for this last condition are

limited in a country which has experienced a long bout of inflation, but it is not altogether excluded. Decontrol and procedural simplification in moving from the disequilibrium system to equilibrium at a devalued rate after inflation has been brought under control may disguise exactly what groups are bearing the brunt of reductions in real income. The more difficult task is to stop the inflation.

The basic condition for successful devaluation is to halt the inflation. The inflation and the resistance to devaluation are both symptoms of politico-economic failure to agree on income distribution, a failure which would be much more readily overcome if production could be expanded. The reason that devaluation adds fuel to the flames of inflation is that it alters income distribution in ways which some groups find unacceptable and seek to counter by expanding their spending on credit or raising administered prices. If a tolerable consensus on income distribution can be found, it should be used first to halt the inflation, and then gently, without disturbing the monetary-fiscal-pricing balance, to substitute an equilibrium for a disequilibrium system.

Thus the condition for successful devaluation is basically political. A consensus among the various economic groups is best. An imposed solution will work provided the pressure from above is maintained, but few of the political structures in the less developed countries are sufficiently sturdy to accomodate that. A very adroit series of economic steps which fool the public, as with money illusion, is possible, but not likely.

The question arises whether India in June 1966 experienced the conditions needed for a successful devaluation. The answer is largely no.

The monopoly position in tea and jute is preserved in the short run by export taxes, but may be eroded in the long by the price support given to competitors. Decontrol was carried only a short distance in the import liberalization of June 21, and by August of 1966 new exports subsidies were being provided for iron and steel products, engineering goods and woolen carpets. Food was in short supply and also raw materials and components. While the Government of India proposed to spend the foreign exchange it had accumulated in the last quarter of 1965 and the first half of 1966, together with new credits from the consortium, it is by no means clear that this could be put into operation rapidly enough to halt the rise in prices which started to shoot up in March of this year. The devaluation took place while the inflation was building up, not when it had subsided. And worst of all, there was no political consensus on the need to make sacrifices for development, but rather strong political discontent, between parties and within the Congress party. It is difficult to see in the Indian picture the ideal conditions for the success of devaluation.

APPENDIX

1966 SUMMER RESEARCH PROJECT: FOREIGN TRADE

Professor C.P. Kindleberger (MIT)
Professor Paul Clark (Williams College)

Proceedings of the October 8, 1966 session of
the Advisory Committee on Economic Development

Dr. Ranis opened the meeting by reviewing past projects and by giving a brief description of the 1966 Summer Research Project. Unlike previous years, sector analyses and specific country guidance accounted for a good deal of work undertaken. In several instances, notably, Brazil, Pakistan, and Nigeria, the work had direct relevance to the Region's and to the Agency's programming process.

Professor Kindleberger then made some remarks on his work done in the foreign trade sector based largely on Latin American experience.* In response to the frequent rather "light hearted" suggestions for devaluation he stressed that the disequilibrium system providing these suggestions was not necessarily a mistake or bad economics. The LDC's find themselves in positions in which controlled exchange rates and licensing of foreign exchange are a better situation in the short-run than a freely floating exchange rate would be. While the desirable end result may be equivalent to a freely floating exchange rate, the path followed in reaching it is not irrelevant. It is probably as important to choose the correct path (which will be dependent on country situations) as it is to reach the goal. For instance, the Harberger-Selowsky recommendation that the purchasing parity of exports be maintained at all costs in Chile could produce an explosive condition, as could the freely floating exchange rate. A once-and-for-all devaluation, unless accompanied by increased exports and a stable domestic scene, would probably produce additional inflation.

The disequilibrium system, even though the product of a condition and not a theory, exists for very real economic reasons. Perhaps the most important of these is the reluctance of any one group in the economy to accept the necessity of having its status change relative to that of other groups. It is politically and psychologically easier in many situations to encase in a very complex shell a change in the relative position of economic groups than it is to accomplish the same thing via an obvious method which makes not only the presence and degree of "hurt," but also the escape route, very apparent. The final goal should be establishment of the equilibrium system and a free market, but in countries like Colombia, Chile, and Brazil, a rapid movement towards this is impossible.

*The "disequilibrium system" is characterized by an overvalued exchange rate, incentives to export and controls on imports. Incentives to export take the form of special exchange rates, tariff drawbacks, tax and transport rebates, access to cheap credit, and access to special foreign exchange. These are adjusted between prime and marginal exports. The system usually has some additional special handicaps to exports in addition to the overvalued rate, such as prohibitions to hold down goods significant for the cost of living. A general handicap to exports is the need to maintain surveillance over all export transactions to collect the exchange proceeds to prevent capital exports. Offsets to imports which are stimulated by an overvalued rate include tariffs, surcharges, special taxes, special rates for exchange, a system of advance deposits.

The Marshall Plan's success in Europe was an instance in which countries did move out of a disequilibrium system position. Mr. Wriggins (White House) pointed out, however, that it is dangerous to draw too many parallels between Marshall Plan Europe and the developing countries, especially with respect to moving out of a disequilibrium situation. Many of the LDC's, unlike the European countries after World War II, do not satisfy the conditions which Mr. Wriggins suggested for a successful devaluation: a relatively stable political situation, adequate food supplies, and an idle productive system ready to roll.

Dr. Chenery pointed out that if a number of conditions must be satisfied in order to move to an equilibrium system, then a policy package, not just one policy, is needed. Adjustment of the foreign exchange rate is not always panacea. He suggested trying to isolate the situations in which any one set of policies will work before applying them. For example, the Harberge-Chile package includes exchange rate recommendations that are based on the assumption that the excess foreign exchange reserves needed to make this successful are available. While all of the SRP papers include recommended policy changes for tariff rates, not all of them consider the total package of fiscal, monetary, and foreign sector policies required to make the tariff recommendations successful.

Professor Clark commented that the policy suggestions developed for Brazil could be considered such a package. They include policies dealing with several features of the rather complex foreign trade system, and aim at reinforcing present efforts to move closer to an equilibrium system both in trade and in the domestic economy.

1. The tariff suggestions emphasize a narrowing of the spread of tariff rates as a means of reducing discrimination between different commodities which are closely related.
2. The present exchange premium system appears to have a greater discriminatory effect than the tariffs, however. The approach of reducing the size of the premium paid to buy exchange for imports in the "special category", itself, could reduce this discrimination while retaining the possibility of offering a higher exchange rate to non-traditional exports.
3. The proposal to make approximately annual adjustments in the exchange rate and to time adjustments to coincide roughly with the wage contract negotiations would fit trade policies into the other elements of the government's program to reduce price inflation in a step-by-step pattern. Given the present foreign exchange surplus, combining a devaluation with import liberalization could have its full effect on export promotion while its domestic inflationary effect is partly offset.
4. Present slack in domestic capacity, even while price inflation continues, would permit a rise in the rate of investment, particularly in sectors stimulated by these trade policies.

Dr. Despres remarked that the Kindleberger paper deals mostly with the Latin American situation. The question of whether, given chronic inflation, sporadic adjustments of the exchange rate are preferable to frequent adjustments is answered only to the extent that doing something about inflation is more important than adjustment of the exchange rates. He would criticize the paper for what it neglects to say: it does not consider the effects of devaluation and adjustments in the exchange rate on the allocation of investment and incentives. Devaluation and decreased aid are not thought of as remedies; usually devaluation is associated with increases in the trade balance deficit. Hazlitt has pointed out that in aid-receiving countries, the balance of payments deficit is often caused by the U.S. assistance. A decrease in the level of aid would help reduce this deficit, but Despres doesn't recommend this. Kindleberger said that he viewed the problem as determining the U.S.'s response to an IMF stand that a particular country needs to devalue. He recommends that we not be doctrinaire.

Dr. Despres's basic objection to the Kindleberger paper is that the framework used is the same as that used for post World War II Europe. There is little analysis of the structural and developmental effects of the recommended policies, and this is what we are after rather than the effects on the rate of inflation. Because of the insufficient definition of the model, the question of dynamics raised in the Kindleberger paper are basically unanswerable.

Dr. Chenery outlined conditions under which the Harberger recommendations for Chile would be appropriate: a good aid level, excess capacity, the possibility of increased production as a result of import liberalization, and excess foreign exchange reserves. The Government of Chile is working towards decreasing the inflationary impact of its public expenditures and this would be even more difficult without an exchange rate that produces investment incentives of the desired type. For a small country, such as Chile, the aid bill required by a policy that moved towards the equilibrium system would probably not be much greater than that at present. In a large country, such as Brazil, this is probably not the case. If the cost of instituting an equilibrium system is too great (in terms of inflation, etc.) then the disequilibrium system is preferable.

Dr. Ranis added that the importance of knowing the initial conditions in the country with which you are concerned should not be underestimated. Before looking through our tool kit to decide what policies should be recommended, it is imperative that we know the historical rate of inflation in the country, the size of the economy and the relative size of the trade sector, and the presence and nature of distortions (causes of them; indirect vs. direct control systems).

Once these are known, we can choose the appropriate devaluation technique from among the following: once a year, once and for all to an undervalued rate, or continuous (accomplished through either de jure or "salami" -- de facto -- techniques).

Emile Despres then went on to outline four propositions on which he felt the Committee members would agree:

1. Devaluation and liberaization in the absence of additional aid and increased imports would prove disastrous.
2. Chronic overvaluation, and the structural consequences of this, seems to be inherent in the chronic inflation process. The freely floating exchange rate cure to overvaluation could produce increased inflation and hence no reduction in the overvaluation.
3. While devaluation may alter price and profit incentives so as ultimately to stimulate exports, it is crucial to have an added dose of immediate imports. In India, for example, the recent devaluation could prove to be a fiasco unless the increased aid, which was a part of the package, is forthcoming. The end result could be inflation in a country with no prior history of this.
4. The real significance to the overvaluation system is that it is an income transfer arrangement providing powerful incentives for expansion, but possibly having harmful effects on backward linkages. Within any given political context, however, the needed injection of imports ought to be used to span the time necessary for production to grow to the point where rational incentive schemes can take over. The idea is to help the previously hurt groups in the economy and not to hurt those previously favored.

Professors Millikan and Mason wanted to know if Professor Kindleberger had meant that in a country like India, domestic controls should be used as a short-run means of correcting the distortions in the foreign sector. Professor Kindleberger said that he didn't exactly mean this. Import liberalization and freely floating exchange rates depend on certain long run economic changes in order to be successful. Until these changes become evident, it may be necessary to maintain the disequilibrium system and the controls which are usually associated with it. For example, in India there are two markets for food, one based on domestic production and the other on imported food stuffs. While devaluation will affect the foreign sector as a whole in the desirable direction, it may adversely affect the already bad agricultural sector. What is needed is both devaluation and a shift in the domestic terms of trade for agriculture. The political facts of life, however, make it too difficult to force one group to be hurt relative to others via a devaluation scheme. Also, the production prerequisite, present in Europe during the Marshall Plan, is not present. Mrs. Bergmann mentioned that the success of devaluation also depends on whether people require that their relative share or their relative position remains the same.

Dr. Ranis pointed out that in the case of India we are dealing with a country with an historical rate of inflation of only 5-10% a year.

Devaluation and import liberalization has been directed in the first instance towards maintaining the price level and increasing imports. Unless the import liberalization affects raw materials and spare parts and hence the productive system, the end result will not be a beneficial change in the domestic economy. Import liberalization interpreted to mean only an increased flow of intermediary goods will not reduce the inefficient allocation of domestic resources.

Dr. Despres emphasized the need to maintain domestic savings. The original purpose of tariffs may have been to curb consumption, but an unintended effect may be to increase domestic production of the goods. Liberalization may reduce the relative prices of these same goods and further increase consumption at the expense of savings. Dr. Despres would not want automobiles and televisions to be as cheap in Brazil as they are in the U.S. Perhaps an excise tax to decrease consumption of luxuries and not redistribute income could be imposed. Professor Millikan pointed out that this policy will work better the lower the income level of the country.

Professor Clark commented parenthetically that he favored attacking the savings problem directly rather than through the pricing mechanism. If the government follows fiscal policies which generate a sufficient flow of savings, he sees nothing wrong in general with allowing consumers to choose between clothes and cars, rather than have a pricing system in which cars are priced out of the range of most consumers. The main thrust of Professor Despres' comments, however - the need to adjust the pattern of production as the economy moves closer to an equilibrium system - makes clear that the speed with which the adjustment occurs is of great importance. The Brazilian Government has been criticized for not stopping the inflation, devaluing, and altering trade policies in one fell swoop. But if one starts from a disequilibrium system and realizes that the necessary changes in patterns of production cannot occur overnight, then a series of partial steps seems the proper way to carry through an anti-inflation program combined with rationalized import and export policies.

Dr. Ranis asked for advice on the general question of de jure vs. de facto devaluation. Professor Kindleberger's paper gives some support to de facto methods, but Dr. Ranis sees disadvantages to this in the cumbersomeness and the inefficiency of the bureaucratic process. Dr. Pye noted that a criticism made of de jure devaluation was that correct timing could be a critical factor, but he suggested that de facto devaluation could also suffer from poor timing. Mr. Gaud questioned whether the choice between the two devaluation methods was not largely a political question. Dr. Despres pointed out that the two methods were not necessarily equivalent unless strong measures were taken to tax foreign investment. Mr. Glaessner stated his belief that the administrative difficulties of a de facto devaluation lead to the worst of all possible worlds.

Dr. Chenery related the above discussion to the process of programming aid by saying that the important problem is usually one of restructuring the economy so as to increase efficiency. In converting from the disequilibrium to the equilibrium system, both the planned sequence of policies to be used and the time table for instituting them are necessary. The time table should take into account the fact that the same set of policy decisions can have very different results in different countries. The capstone to the whole process is growth. Programming of aid should be on a step-by-step, sector-by-sector basis leading to a general devaluation measure, if necessary.

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HUMAN RESOURCES DEVELOPMENT

Kenneth C. Kehrer

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A.I.D. Discussion Paper No. 15

HUMAN RESOURCES DEVELOPMENT PLANNING

Kenneth C. Kehrer

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March, 1967

Introduction

This paper was prepared for the Office of Program Coordination as part of the 1966 Summer Research Project sponsored by that office. It is intended to serve as an introduction to the rapidly expanding body of literature on the economics of education. The knowledgeable reader will find little that is original in the pages that follow. What will be found, however, is an attempt to integrate the literature, with a view toward evaluating it from the perspective of the planner. The essay seeks to find policy guidelines in the literature.



Human Resources Development Planning:

An Introduction

by Kenneth C. Kehrer

The growing awareness of the contribution of improvements in the quality of human resources to the process of economic and social development has become increasingly evident. The pace of development is seen as depending upon the amount and quality of education (both formal and informal) embodied in the population, just as it depends upon the amount and quality of machinery and other fixed capital. Economists and planners had been more narrowly concerned lest lack of skills become a bottleneck to growth; the current concern makes explicit the resource allocation problems under conditions of scarcity.

These problems take a very practical form: Planners must decide what fractions of development and recurrent budgets to allocate to the education sector. Resources scheduled for this sector must be partitioned into those available for the formal education system (schooling), and those allotted to training programs and more informal processes of education. Portions of the schooling funds must be designated for each stage of the system. Competing demands for those funds arise even within the primary school subsector, and decisions must be made among such uses as teacher' salaries, buildings, equipment, and textbooks.

Educators, for their part, can urge increased investment and operating budgets for education, but they surely will get less than is required to improve quality, extend coverage, and reorient the content of education as quickly as they would like. Moreover, planning the development of an education system is complex: it is necessary to take into account not only the funds likely to be available both in the coming year and for several years thereafter, but also the comparative costs and effectiveness of different types of education; the rate at which different types of facilities can be constructed, and the possibilities for the development and manufacture (or importation) of textbooks and equipment; the number of teachers of different levels of qualification and training available, and the rate at which more could be trained or imported; the number of qualified students expected to be available to enter different intermediate and advanced courses in the next few years; the comparative drop-out and failure rates of different courses of education, modified for expected improvements; and a host of other factors affecting the feasibility and costs of expanding and improving different parts of the system. Both because resources are scarce, and because the problems are so complex, educators are becoming increasingly interested in techniques which will permit them to take the relevant factors into account systematically, and to make judgments as to which are the highest priority problems on which to concentrate funds and attention.

In response to these kinds of questions, there has emerged a body of literature -- "human resources development planning". This is an umbrella concept, sheltering quite disparate methods of inquiry. They

are similar, however, in that they view education as an investment which will lead to increases in Gross National Product or social welfare.

The purpose of this report is to summarize briefly several of these types of research which have recently begun to develop techniques for deciding how much of a developing society's scarce resources should be allocated to education and training, as well as determining the relative emphasis to be placed on different levels and types of education. The report will indicate, for each of five major types of research:

the question(s) which the research seeks to answer

the techniques used to answer the question(s)

the major limitations of the approach

The report also refers to several of the most important studies of each type, and their major conclusions, for further reference.

THE RATE OF RETURN TO EDUCATION

(1) The question. What is the net value (expected benefits minus costs) to an individual or the economy of different kinds and levels of education and training?

This is essentially two questions: one focuses on the decision of an individual, while the other concerns choices by society. Both the personal profit and the national productivity orientations seek to weigh alternative uses of resources; the alternative which maximizes the difference between expected gain and loss, expressed as an average annual rate of return on the cost, is regarded as the best investment.

(ii) The research technique. As in all techniques of this type (systems analysis, operations research), the usefulness of cost-benefit analysis depends on the analyst's ability to identify all the costs and benefits, and to express alternatives in commensurable ways.

Much of the research conducted to date has consisted of attempts to identify the costs and benefits of kinds and levels of education; dollar value has been taken as the yardstick in most cases.

When the question focuses on the individual, the future stream of gains attributable to an extra period of education can be compared with the costs incurred in obtaining that increment. Since a dollar received in the future is less valuable than a dollar received today, the future stream of gains must be discounted by an appropriate factor, analogous to an interest rate. The rate which equates the costs incurred in a given year with the discounted stream of benefits is the "internal" rate of return. The person making the decision can then compare various internal rates of return on different courses of education and training. He may also weigh an extra year's schooling against an investment in real or financial assets. The rates of return will presumably provide guidelines toward rational economic action.

For the individual, the discounted future stream of extra earnings attributable to education is frequently taken to be the relevant concept of benefit. But these extra earnings may understate the benefits of an increment in education. Education may lead to benefits which exceed the extra money incomes earned by the educated. Jobs which require

relatively more education may be the "preferred" jobs. If this is true, the analyst should add a dollar sum which approximates this nonmonetary attraction to the total benefits. Part of the value of an extra period of education may be the option it gives one to continue still further up the education ladder. The value of this option will vary with the rate of return on higher educational stages, and the probability that the option will in fact be used. Viewing education as a series of related steps, Weisbrod [40] demonstrated that the expected rate of return on primary education in 1939 would rise from 35 percent to 52 percent in the U.S.

In arriving at a measure of benefit, the analyst generally compares lifetime after-tax earnings of people who have had relatively more education with those who have had relatively less. But this may attribute increases in earnings to education which may actually have been caused by systematic differences in intelligence, ambition, family connections, mortality rates, or unemployment experience. Becker [3] has demonstrated that adjusting U.S. data for differential ability reduces his estimate of the rate of return on college education from 11 to 9 percent. Denison [13] reduced the observed earnings differentials by two-fifths as an arbitrary attempt to correct for the possible overstatement of the benefits of education.

Identifying the costs of education can also be a major problem. For studies of the private rate of return, only the costs incurred by the individual (or his family) appear to be relevant to his decision to obtain more or less education. A large part of the costs borne by the individual are "opportunity costs" -- costs which are approximated by

the income that he could have earned if he had been working instead of being in school. Schultz [31] has found opportunity costs to be about 60 percent of the total costs of high school and college education in 1956.

Education is also a source of present and future pleasure. Treating expenditures on education as an investment neglects the consumption aspects of the educational experience, reflected in the evidence that many people thoroughly enjoy schooling. The impact of education on consumption also appears to endure beyond the period of schooling, extending the range of leisure activity. Schultz has suggested elsewhere [33] that the value of these consumption components should be identified and subtracted from total costs in any study of the rate of return to education as an investment. Bruton [11] has agreed with this approach, but it has been criticized by Bowen [5] on the grounds that it is difficult to estimate the consumption element of educational costs. Even if the consumption costs could be conceptually separated from the investment costs, he argues, the information would be of little use since one could not decrease the consumption expenditures without at the same time cutting back on the investment expenditures on education. Bowen suggests, alternatively, that the worth of these consumer experiences be estimated in money terms, and that they be added to the benefits in the cost-benefit calculation. This method encounters difficulties too, for the evaluation of the consumption part of education depends upon the preferences of individuals and society as a whole, with respect to both education and other kinds of

consumable experiences. Lewis [22] has asserted that a developing country cannot afford the luxury of the consumption components of education.

A set of similar studies has questioned whether society as a whole is investing the proper share of its resources in education. These studies assume that earnings reflect productivity in a market economy, and look at differentials in earnings as an index of the impact of education on economic development. Along with other types of cost-benefit studies, analysis of the social rate of return to education shares many of the problems pertaining to the private rate, discussed above.

The relevant concept of cost here clearly appears to be all costs, including public subsidies. Problems arise on the benefit side, however, due to the existence of "external economies" and the nonmonetary attractions of educationally-heavy occupations.

External economies (often called indirect benefits or social benefits) consist of those benefits which are not confined to the individuals receiving education; rather, they spill over to the economy as a whole. Society may gain more from the education of ten more college students than the simple sum of their discounted future increases in income. For example, some other persons may earn higher incomes because of the further education of these ten. Possibilities include their employers,

subordinates, or families. Education may move individuals to perform acts which give pleasure to others. Failure to allow for these kinds of external consequences of education would distort any attempt to assess its relative costs and benefits.

Then too, education is inextricably associated with advances in knowledge, which has important economic effects. The social and political external benefits which society as a whole receives may also have certain economic effects. Weisbrod [40] has suggested that these savings might be estimated by means of "avoidance costs". If it were not for education, society might have to pay more for police protection, traffic control, and medical care (as opposed to prevention).

As society becomes more affluent, people tend to place more and more weight on the nonmonetary attractions of a job or career. Since a disproportionate share of these attractive jobs are open only to college graduates, the social rate of return should take the value of this benefit of education into account. Villard [39] has suggested adopting an upward revision of the benefits, as in the individual rate of return calculations. Bowen [5] disagrees, arguing that the important consideration is whether or not the nonmonetary attraction to the employee is a cost to the employer. No revision of the benefits is called for if attractions like "prestige" only change the willingness of people to enter different occupations at different fixed pay scales. But if the employer offers subsidized housing, travel, lush offices, generous paid vacations,

on other fringe benefits which increase his costs, the rate of return should be adjusted upward.

Bowen's arguments neglect the possibility that the nonmonetary attractions of certain jobs may be detrimental to the income or rate of growth of income of a society. Others [5][30], including Balogh [2] and Lewis [22], have asserted that the attractions of white-collar jobs in underdeveloped countries have diverted workers away from preparation for the technical and mechanical occupations which are so necessary for development.

These controversies ultimately hinge on whether the benefits under review are those which enter into a standard measure of economic well-being like GNP, or a less narrow concept like social welfare. Nonmonetary attractions of educationally heavy jobs would raise the rate of return on education expressed in terms of social benefits, but not always in terms of GNP.

Since the benefits of education occur over time, and a sum earned tomorrow is worth less than the same sum earned today, rate of return studies encounter the problem of choosing an appropriate discount factor. Such a factor could be applied systematically to any future stream of earnings to determine its present value, i.e., the amount that those future earnings could be sold for today. The "market rate" of interest is often suggested as the proper discount rate in theoretical discussions. In practice, however, there are many interest rates, each reflecting the ability of different types of borrowers to gain access to

resources. Bowen [5] has suggested that individual calculations utilize the rate of interest that individuals face in the market as a discount factor, while social decisions should be based on future returns discounted by the cost which the government incurs in borrowing. This raises interesting possibilities inherent in the availability of foreign aid. If the government of a developing nation can obtain soft term loans or grants for the purpose of improving its educational system, Bowen's criteria would suggest using a very low discount factor, or not discounting future income at all.

Alternatively, Becker [3] has used the average rate of return on private investment in physical capital as a discount factor, but this overlooks the existence of differences in risk between investment in factories and in people. It is also possible that the government may not possess opportunities for investment which are as lucrative as those of the private sector. This controversy over discount rates stems from the realization that rate of return comparisons are highly sensitive to the choice of the rate. Using U.S. data for 1950, Houthakker [19] has shown that the saleable value at age 14 of a college education varied from \$280.989 using a zero discount rate, to \$30,085 using a rate of 8 percent.

(iii) The limitations. The rate of return approach has great appeal because it offers a means of determining the extent to which individuals should obtain further education, and the amount of education which society should underwrite. There are, however, serious limitations to this kind

of analysis. These concern two aspects of the use of current earnings data in the calculation of benefits. On the one hand, present differences in the earnings of one occupation relative to another may not persist into the future. On the other, current earnings may not be an adequate measure of the productivity of a worker.

The structure of relative earnings among occupations is expected to change over time as relative scarcities change. Suppose high schools had to pay higher salaries to attract and keep relatively scarce science teachers than to hire abundant history teachers. The observed rate of return on a specialization in science would be greater than the return on a history concentration. Drawing a policy prescription from this evidence, it would appear that more science teachers should be trained on the margin. Individuals who opt for this training might be surprised later in life to discover that abundant science teachers were then earning less than the scarce history teachers.

The existence of divergent rates of return on preparation costs for alternative professions may set into operation market forces which will tend to destroy those differences. In the course of development, the income structure of occupations changes substantially and rapidly. It is not clear how accurately current or historical rates of return predict future rates. Renshaw [30] and Machlup [24] expect future rates of return to be lower than present ones, due to the phenomenon of diminishing returns. An increase in educational attainment, they argue, takes

place only by lowering the average ability or motivation of the entrants and graduates. Others also expect the past to be a poor guideline, but feel that it understates future returns. They see the dawn of an era in which education and knowledge will become increasingly important.

The evidence, however, supports the proponents of the rate of return approach. Miller [26] has found that the returns on increments of education do not fall over time as an increasing proportion of the population obtains education. Becker [3] has also discovered nearly constant rates of return on education between 1940 and 1950. Renshaw admitted that factors like dynamic technological progress could produce such results. It thus may be plausible to predict future rates of return on the basis of current ones.

Whereas the existence of such constant rates of return may be adequate justification for a personal decision to obtain more of a specific kind of education, it may not be a correct indicator for social or government expansion of education expenditure. This is because earnings may not measure productivity. High rates of return on a medical education or the study of probate or tax law reflect the high earnings of the practitioners, rather than the social productivity of these professions. The high incomes are the result of barriers to entry into the profession, or confusing laws and arrangements which necessitate the services of duly licensed specialists or "insiders." Society could instead choose to remove restrictions on entrance into medical school, or change the laws which create economic advantages for a few.

This question is further muddled by the realization that all education gives the recipient some monopoly power over a non-recipient. An economist can earn a relatively high income because he has worked at understanding a set of problems; if the answers to those problems were common knowledge, it is doubtful that the rate of return on a Ph.D. in economics would be as high.

Others [5] [15] have pointed out that high salaries may be paid although they are unnecessary for recruitment. Wage structures may be determined by tradition, or they may reflect the former colonial wage scale which distorts the present day allocation of human skills in the underdeveloped countries. Harbison and Myers [15], and W.A. Lewis [21] have described how earnings in Africa are set abnormally high, in order to prevent a drain of educated human resources to Europe. Bowen [5] has cited a problem which occurs more frequently in modern industrial nations. Employers might engage in "conspicuous production," hiring, say, college graduates for jobs which don't require college education.

The criticism of the rate of return approach on the grounds that current earnings are poor guidelines to future social productivity is especially telling in the context of the less developed countries. There the wage structure is particularly distorted. Hollister [17] has emphasized the misallocations of labor resources which occur when wages do not provide employers and employees with cues for decision-making.

Also damaging to the rate of return approach is the failure to account adequately for the interaction between the education of one person and the benefits which others receive from it. Certain kinds of education may be complementary (e.g., that of doctors, nurses, and laboratory technicians). Educating one group but not the others may be fruitless. In cognizance of these complex interactions, it is widely held that society's return on education expenditures is greater than the sum total of individual returns on the same expenditures. Attempts to investigate these relationships border on (1) studies of the residual in economic growth on the one hand, and (2) correlations between levels of education and economic development on the other.

THE RESIDUAL IN ECONOMIC GROWTH

(i) The question. How much has improvement in the quality of labor contributed to economic growth in the past?

The quality of the labor force is expected to rise as its members receive more and better education and training. This approach seeks to isolate the impact of education and training on the historical growth rate of GNP. The procedure used, however, is indirect; the contribution of improvements in the quality of labor is generally found as a residual.

(ii) The research technique. Economists traditionally identify two kinds of physical inputs in the production process: capital and labor. The analyst asks what the contribution of these identifiable factors of production has been to the historical rate of growth of output. Given

the latter, he calculates constant price indices of the amounts of capital and labor actually used in production during the period in question.

Since he is interested in the contribution to output growth of both capital and labor, the analyst wishes to combine these two indices into one overall arithmetic index of inputs. To do so, he takes a weighted average of the original indices, using the share of output earned by the owners of capital as the capital weight, and weighting the labor input index by labor's share of the output.

The composite input index is then compared with a constant price output index. Simply subtracting the rate of growth of the inputs from the rate of growth of output yields the residual.

What is this residual? Although it has been attributed to many things, it has most often been identified with improvements in the quality of labor, the impact of education and increases in knowledge, or technical progress. Other possible explanations of this residual include improvements in the health of the labor force and in the conditions under which labor works, progressive historical improvements in the quality of machines or management, increase in the size of firms, and new products. Abramovitz has called the residual a "measure of our ignorance."

How large is the residual? Kendrick [20] performed the calculations outlined above for the U.S. economy from 1889 to 1957. He found that the output index increased at an average annual rate of about 3.5 percent, compared to the 1.9 percent per annum increase in the combined

input index. This left a residual of 1.6 percent, which Kendrick called "total factor productivity." Hence 46 percent of the rate of increase in total output is not attributable to the rate of growth of capital and labor. The residual is quite large.

Kendrick's study also examined the contribution of the residual to increases in productivity or output per unit of labor input. Using data for the private sector of the economy, he attributed only 20 percent of increases in productivity to increases in the amount of capital used by each worker on the average. If only one fifth of increases in output per worker are brought about by increases in capital per worker, the remaining 80 percent is the 'unexplained residual.

The size of the residual and the uncertainty about its components have been a challenge to further research. One method of gaining insight into the puzzle of the residual would be to trace out the implications of specific assumptions about the nature of the way inputs are transformed into outputs in the production process. Solow [34] and Massell [25] both assume that productive enterprises are exactly reproducible, and that inventions and technical change proceed in such a way that they do not, in and of themselves, change the relative use of capital and labor.

Although they utilize different data sources and perform slightly different adjustments to allow for unemployed machines, Solow and Massell obtain virtually identical results. Solow's finding was that the residual contributed 87 percent of the increase in output per man hour; Massell found that 90 percent of increases in productivity in the U.S. economy

from 1915 to 1955 were attributable to the residual. That is, if doubling the inputs used in production exactly doubles output, and if technical progress has a neutral effect on the relative use of inputs, almost nine-tenths of historical increases in productivity are unexplained by the traditional inputs.

Another approach to the problem posed by the residual would be to attempt to disaggregate it into recognizable elements. Denison [13] identifies inputs other than capital and labor, and subtracts the rate of growth attributable to all identifiable inputs from the total rate of growth of output. The resultant small residual is called the effect of advances in knowledge. Denison makes separate estimates of the impact on output of factors like formal education and the growth of the size of firms. Thus he is able to reduce the size of the residual by explicitly considering factors which had been lumped together elsewhere.

In estimating the contribution of schooling, Denison [13, Ch. 7] uses the rate of return approach of the last section. On the basis of 1949 data, he compares the average earnings of males over 25 with the amount of formal schooling they have obtained. The average differences permit calculation of an average rate of return on extra education. This rate of return is then used to relate net changes in the stock of educated people to the influence of improved labor quality on the growth rate. For the period 1929-1957, Denison calculates that the rate of increase in GNP due to the education of the labor force alone was .68 percent. Since GNP

grew at the rate of 2.93 percent per annum, education of the labor force accounts for almost one-quarter of output growth. Rising educational attainments of the labor force accounted for more than 40 percent of the increase in per capita income.

Harberger and Selowsky [14] have used Denison's approach in the study of an underdeveloped country. Although they considered official investment rate projections for Chile implausibly high, they nevertheless found official projections of growth rates to be attainable. This was because increases in the quality of labor as the result of education were expected to add .93 percent to the Chilean growth rate during each of the years from 1967 to 1970.

As one of the steps toward that conclusion, Harberger and Selowsky calculated rates of return on several stages of education. In Chile, special education beyond the primary level appears to have the highest payoff, 29 percent per annum. Primary education itself was found to return 24 percent on its costs, while the rates of return on secondary and university education were 16.9 and 12.2 percent, respectively. These returns were combined in a weighted average rate of return to education of 21.8 percent, which was called the "marginal efficiency of educational capital." Information about the changing size of the labor force, and the amount of education they had experienced, permitted calculation of the contribution of improvements in labor quality to the growth rate.

(iii) The limitations. Studies of the residual have dramatized the importance of education in the process of economic growth. This success

of the analysis of residuals may also be a weakness. The emphasis on rates of growth of GNP has perhaps occurred at the cost of underemphasis of other social goals. In the economic sphere, a society also has objectives with regard to price stability, full employment of labor, the distribution of income, and the composition of output. The work reviewed in this section has not attempted to analyze the impact of education on these areas of concern.

The research performed by Kendrick, Solow, and Massell fails to take into account the interaction between capital and technical progress. The capital input series essentially reflects the exact duplication of old machines in the manufacture of new ones. In these studies there is no way to allow for the fact that newer machines are usually better than their older counterparts. Thus, estimates of the contribution of capital may be too low, and the size of the residual may be exaggerated.

The work originated by Denison has attempted to sort out these kinds of interrelationships, but the methods of calculation employed have frequently been questioned [15], [8]. Though Denison and Harberger and Solowsky claim to measure improvements in labor quality derived from education, they include only formal education in their analyses; informal education and on-the-job training are neglected. In addition, the returns computed in the course of these studies are private, not social, returns. No effort is made to understand the contribution which education and work experience make to increased mobility and adaptability, and hence to more

rapid application of advances in technology.

To the extent that the residual approach uses rates of return and draws policy prescriptions from historical behavior, it is subject to the limitations discussed earlier. Moreover, unless one is willing to assume with Denison that an extra day of education at, say, the primary level has the same effect on GNP as a day spent at any level (even post-graduate), this form of research appears to add little to the policy-making framework. That is, decisions about the allocation of resources to education which were based upon rate of return calculations would not gain substantial insights by also undertaking analysis of the residual. Harberger's work has demonstrated new uses for this technique, however, and it may not yet have been pursued far enough.

The residual has established the relative significance of education in economic growth. Dissatisfaction with the large portion of unexplained phenomena, and a desire to understand the causal relationships prompt an interest in statistical inference. Pursuing Denison's study in a behavioral direction, one would encounter the attempts to correlate indices of education with indices of development.

THE CORRELATION BETWEEN EDUCATION AND DEVELOPMENT

(1) The question. Is there a systematic relationship between a society's educational attainment and the level of its GNP?

Since expenditures on education are expected to increase incomes, questions arise as to what the nature of this relationship is. Will a

nation which devotes a relatively large share of its resources to educating its labor force always obtain relatively higher levels of GNP? Will it obtain extra income immediately, or only after some delay? Does the same relationship hold among industries, and among firms?

(ii) The research technique. Simple correlation analysis is applied in the search for these relationships, either cross-sectionally, or over time. Statistical tests are used to judge the strength of the relationship.

Perhaps the easiest correlation to envisage is the one expected between education expenditures and GNP over time. Schultz [32] and Harris [16] have attempted correlations of this kind for the United States. Their hypothesis, that levels of expenditures on education are related to (or cause) levels of GNP in the same year, has come under attack by Bowen [5]. He argues that education is a long-lived asset; the recipient of education earns (or contributes) a higher income for most of the rest of his life. Thus the economic effect of an increase in education expenditures should not be sought in the year of its disbursement. GNP may even be lower that year, due to the diversion of labor resources from factories to schools. Education expenditures today should instead be related to future rises in GNP.

The choice of an appropriate time lag for the regression model is a difficult one. Most choices are either arbitrary or designed to obtain the neatest results, after trying a host of alternatives. Rather than adopt these indefensible positions, an alternative is suggested by the nature of the lagged response. The level of GNP ten years from now is

seen to depend partly on education expenditures last year, partly on those of this year, partly on next year's expenditure, etc. In other words, the level of GNP in a given year depends upon the total stock of educated persons in that year. This stock is the result of all past additions to education minus any attrition.

Schultz [31] [32], who has provided the creative leadership for much of the study of the economics of education, has attempted to measure the stock of educational capital for the United States. His suggestion to weight younger persons more heavily than older ones when adding up the stock of education has been criticized by Bowen. The weighting procedure is correct if one wishes to know the salable value of education, Bowen asserts, but it is not desirable for the relation of current educational attainments to current GNP. This controversy appears to hinge upon whether educational units are commensurable over time.

Opinions on the intertemporal quality of education vary markedly. Denison [13] concluded that a graduate of eighth grade today is equivalent to a 1910 college graduate. At the other extreme, Machlup [24] contends that the quality of a given grade deteriorates with the dilution of the quality of students brought about by the drive toward universal education. When the length of compulsory education is changed from, say, six to eight years, schools merely stretch the same educational content over two extra years, to cope with the new seventh and eighth graders who have less ability or motivation on the average than their predecessors. Denison's conclusion

actually stems from an assumption of constant quality of education per day over time. Doubling the number of days spent in school per year, he asserts, should have the same effect on output as doubling the number of years of schooling.

Another way to investigate the education-income relationship is to observe the differences among countries. Svennilson, Edding, and Elvin [35] have attempted inter-country correlations between per capita GNP and enrollment rates. The latter are the number of students enrolled in a particular grade or stage of education expressed as a percentage of all students whose age qualifies them for it. Bowman and Anderson [10] also look at international comparisons of income and education levels. They first divide countries into three groups according to their index of energy potentials per capita. This was used as a proxy for productive potentials; energy potentials are independent of past capital accumulation, the quality of labor, and socio-economic attitudes and organization. For each group, GNP per capita was correlated in turn with each of the following variables: (1) the percentage of adults who are literate, (2) the percentage of population in post primary school, and (3) the percentage of population, age 5-14, enrolled in primary school (primary enrollment rate). Their study also tried to correct for agricultural potential on the basis of cultivated hectares per capita. Despite all of this careful work, neither the Bowman and Anderson study, nor the work of Svennilson, Edding, and Elvin produced very strong conclusions. To be sure, GNP per capita was positively related to indices of education, but there was considerable dispersion.

In a recent study, McClelland [23] has attempted to use a dynamic approach to cross-country analysis which allows for the introduction of the time lag. He compares enrollment rates in one period with growth rates in a later period. Grouping the countries studied by an electric power index, in the manner of Bowman and Anderson, he observes that countries with higher university enrollment rates in 1950 achieved greater increases in per capita income during the 1950s. These differences allow him to calculate an annual rate of return on extra university education of 12 percent. McClelland also concludes that countries with higher secondary enrollment rates in 1930 grew more rapidly during the 1950s than countries with lower rates.

This study is weakened by the lack of an attempt to correct for other factors which might have caused the higher growth rates of GNP per capita. Then too, McClelland's results would be reversed if the U.S. and Canada were excluded from the study. His analysis is severely challenged by Bowman [8] [10] who found that income in the 1930s explained enrollment rates in the 1950s better than schooling in the 1930s explained income in the 1950s.

Little work has been accomplished in the area of inter-industry or inter-firm analysis. Cross-sectional correlations between the training or education of workers and the profitability of firms or industries await further study. Economic theory would not expect a systematic bias between profitability and the use of highly trained manpower. If a strong relationship were uncovered, an explanation would certainly be necessary. Casual

empiricism suggests that a correlation exists between profitability and the percentage of a firm's labor force who have training beyond the secondary level. The more profitable industries, however, may also be the ones with a high degree of market power; or they may be engaged in Bowen's conspicuous production, or both. Clearly, further study is needed here.

(iii) The limitations. The correlation analyses are subject to chicken-egg controversies, for while it can be shown that countries which invest relatively more in education reap higher rates of growth of national income, it can also be demonstrated that nations which have high levels or rates of growth of income tend to consume more education. An example of this two-way causation problem is the correlation calculated by Schultz [32] between expenditures on education and GNP. The coefficient obtained through regression analysis indicates that expenditures on education grew 3.5 times as fast as income. The significance of this coefficient may be that as people attain higher incomes, they tend to spend a larger portion of it on education. Or it could reveal how much extra education was necessary to obtain a given increase in GNP. Both of these propositions are undoubtedly true to some extent, but the work reported on in this section cannot disentangle the relationship in the absence of other information.

The cross-country work of Svernilson, et al. does serve some useful purposes, however. Planners in a developing nation are able to look at their own educational programs in the perspective of the experience of

other countries. Countries with the same per capita income and socioeconomic characteristics can yield information on what levels of education may be possible, on the one hand, and necessary, on the other. The current levels of education in more advanced countries can give planners a general idea about future demands, and the experience of these countries can also be instructive.

There is a danger, however, in regarding the levels of educational activity associated with advanced countries as norms. It is doubtful whether current or historical patterns of educational development in these countries are to be considered optimal. Many developing countries may have over-invested in education, as Anderson and Bowman [9] and Lewis [22] have suggested. It is also probable that the more complicated levels of technology associated with today and tomorrow will require higher levels of education at every stage of development than have been observed historically. Since the effectiveness of education appears to depend upon the extraschool environment, more education would be required in a primitive rural area than in a city to achieve equal results. In any case, identical education expenditures in two countries would imply equal educational output only if teachers, buildings, and other resources were used with the same efficiency.

Ignoring all these problems, McClelland [23] observes that the successful growth cases among the less developed countries were those in which enrollment rates ranged from 10 to 20 per thousand in the population. He also found that university enrollment rates are about 2 per thousand for those less developed countries which are growing rapidly. He thus concludes

that these levels of education should be the targets of the more stagnant LDCs.

Inter-firm and inter-industry correlations may prove interesting, for one would not expect the chicken-egg problem to be as severe as in the more aggregative education-GNP correlations. The usual view of the behavior of firms does not suggest that they would hire educationally heavy inputs in order to enjoy their presence. Firms which hire a disproportionately large number of scientists or other highly educated people presumably do so to increase profits. Even if there is some conspicuous production, it cannot be as pronounced as the consumption attitudes toward education among individuals.

Correlation analysis suffers from many of the same problems as the rate of return studies. It is forced into assuming that a great many other things are equal. The external benefits of education are not explicitly considered. For example, in the cross-country correlations, no attempt was made to measure the effect of education in one country on the incomes of other countries. Bowen [5] concludes that simple correlations of this kind cannot give us any information about the quantitative dimensions of the contribution of education to development.

In the face of all of these difficulties, planners have still managed to design and attempt to implement programs for human resources development in the past, and they will continue to do so in the future. What methods of analysis have they utilized? One set of studies is designed to assess the demands of the economy for skilled workers. Other kinds of analysis have set their goal to be the supply of these skills.

FORECASTING AND PLANNING FOR MANPOWER REQUIREMENTS

(i) The question. What is the quantity and composition of additional skilled persons needed over the planning period in order to support the desired rate and pattern of economic development?

The production of goods and services requires capital and labor; the production of certain kinds of goods and services requires certain kinds of machines and labor. Labor is differentiated by skill, and skills are usually obtained over the course of time through formal or informal processes of education and training. Given the output goals of an economy, it is necessary to determine how many skilled workers in each skill category will be needed, just as one estimates the requirements for the number and types of machines. Similar to the manner in which one anticipates the need for the use of capital by planning to produce domestically some items and import others, the successful implementation of the plan depends upon the ability of the society to produce the necessary mix of skills.

(ii) The research techniques. There are essentially three methods of forecasting manpower requirements: (1) employer surveys, (2) analysis of the experience of more advanced countries, and (3) use of fixed-coefficient projection techniques.

Surveys of employers' expectations of their future needs are rapid methods of obtaining useful planning information. The survey can be restricted to those industries which are expected to expand, and the information may be

collected inexpensively. The shortages revealed by employer surveys may, however, be relevant only in the short run. Employers probably possess shorter planning horizons than is suitable for decisions made on behalf of the whole society. The immediate nature of employers' perceived demands is important with regard to skills which require long periods of training. An educational system cannot be asked to give three years of training to a person required next month.

The experience of other countries, whether similar or more advanced, can also yield information about the size and composition of skilled labor pools that may be required in the course of a country's growth. Again, planners must be cautioned against relying on the pattern of skills observed in other countries, for most of the same reasons that reliance on the enrollment rates of others may be inappropriate. The range of possibilities for substitution among inputs in the production process is often quite wide. This substitution can take place between labor and machines, and among labor of different skills. The value of looking at skills used in other countries depends upon the range of substitution permitted by available technology, as does the entire manpower forecasting and planning exercise.

Some production processes are characterized by fixed coefficients-- i.e., the amount of labor necessary is determined once the amount of capital to be employed in the operation is known. A good example is the ordinary shovel. It is generally set into operation by the use of one worker. Less than one worker will not do, and more than one worker using a shovel may be

almost as bad as none. Other production processes are capable of using a wide variety of combinations of men and machines. The use of fixed-ratio projection techniques thus pertains more to the former processes.

The methodology of projecting manpower requirements with fixed ratios has been described exhaustively by Sugg [38] and Parnes [27]. First, it is necessary to obtain an estimate of total employment for the target date. This can be accomplished in several ways. If the planner is fairly confident that he can predict future investment, he can estimate future employment on the basis of fixed incremental capital-labor ratios. Alternatively, the planned investment figures could yield the level of increased output when divided by incremental capital-output ratios. The amount of labor necessary to achieve those increases in output can then be obtained with the use of assumptions about productivity (output-labor ratios). These anticipated levels of employment can be corrected for observed trends or any other relationships the analyst can discover between employment in various industries and other economic indicators.

The projection of employment of undifferentiated labor thus should take into account any anticipated changes in demand, hours worked, or productivity. The level of aggregation chosen usually depends upon the information available, but a detailed analysis of the projections by sector or industry is desirable. By disaggregating, allowance can be made for changes in industrial structure which occur as industries grow at different rates.

It is then necessary to determine the skill composition of the projected employment by industry. This is accomplished by applying existing

or anticipated occupational composition patterns for each industry. Data availability will again determine the choice of skill detail, but attention should be addressed to the skills which require long periods of training.

In practice, as in the Mediterranean Regional Project of the OECD [28] [29], fixed-ratio projections are adjusted on the basis of the experience of other countries and surveys of employers.

Once the manpower requirements have been forecast, it is possible to trace their implications for the educational system and training institutions. The requirements can be compared with the expected supply by the target date, and shortages and surpluses of various occupations and skills can be ascertained. On the basis of these projected gaps, the educational planners can expand some activities and curtail others.

An essential link, however, must be forged conceptually before supply can be contrasted with demand. It is necessary to determine the amount of education and training required by each occupation. The translation of the demand for labor differentiated by skills into the composition and duration of education has never been accomplished satisfactorily. Even the detailed job analysis and exhaustive listing of educational qualifications for very specific occupations by the OECD [27] have proven inadequate.

The problem is that very few jobs require a specific combination of ability and training. Most skills fall between two extremes: occupations which require only a short period of observation, as opposed to jobs which require the mastery of precise operations which can only be learned over a

considerable time span. Not only must the duration of training be decided upon, but the choice must be made between formal and informal education. There appears to be a wide range of substitution between educational qualification and job experience in many occupations. The type and length of training required for, say, a shoemaker will also vary with the kind of capital he has available on the job. Simple tools require a process of training, and perhaps a trainee, quite different from that demanded by automatic machines. The problem is further complicated by the observation that general education often enables a person to grasp specific instruction more readily.

(iii) The limitations. There are some [5] who would assert that manpower planning does not belong in this survey, since it is not directed at assessing the economic contribution of education. This line of argument is misleading, for if manpower requirements are interpreted in their strictest sense, all of the economic contribution of certain activities could be assigned to education. For example, a modern jet airliner could not get off the ground unless there existed a technician or crew trained to fly it. In this case, if the training failed to take place, the airplane would make no economic contribution; the entire economic contribution of the airplane in service could be attributed to the training of pilot and crew.

But how well should the pilot be trained? A minimum amount of training is necessary to enable him to get the plane aloft, and return it safely to the ground; but beyond that, should he be a first-rate pilot? Or should he be second or even third-rate? The manpower forecasting and

planning technique no doubt assumes that training requirements are more specific than they really are. There is enough substitutability in economic activities to negate the existence of fixed coefficients, but the opposite extreme may be even further from reality. Workers of different skills are not perfect substitutes for each other.

Manpower planning implies that the levels of economic activity which have been forecast could not take place without the specified training. This is not completely correct, but it is probable that the activities could not take place very well without the required skilled workers. Bruton [11] has argued that there is evidence that substitution is far from perfect among skills in an LDC, so the manpower forecasting and planning approach may thus be relevant for its needs. He cautions against always assuming that the education sector will or should respond to the needs of the production sector. Often the latter will initiate an activity in response to the existence of a pool of skilled labor resources.

The record of manpower forecasts, however, has been rather poor; major projections have been substantially inaccurate. Bowen [5] has suggested that they tend to understate the future demand for labor of various skills, due to the rapid pace of scientific developments. Difficulties are also encountered in projecting the employment of people with general training. Even where the notion of fixed coefficients is approximated, as in the case of engineers, the graduates of training programs may thwart the planners by not entering the occupations for which they were trained.

In the course of a recent attack on the foundations of manpower projection, Bowman and Anderson [9] agree with the earlier criticism by Bowen [5] and Hollister [17]: manpower planning is only a partial method of analysis, since it ignores costs. It may be true that employers will need workers of specific skills, but are they willing or able to pay for them? Manpower planners have often been guilty of identifying shortages and proceeding to train the appropriate number of workers regardless of cost. Decisions to train additional workers or to expand educational facilities, under conditions of scarcity, require the balancing of costs and benefits.

Manpower planning has been accused by its several critics of misleading students in their career choices and creating a rigid pattern of staffing whereby all positions in a society are filled according to strict educational qualifications. More relevant is the criticism that manpower planners frequently assume that formal education in vocational and technical schools is the only source of middle level manpower. This neglect of the possibilities for on-the-job training and skill upgrading has contributed to inaccurate forecasting, and wastefulness, since technical schools are very expensive.

The Mediterranean Regional Project of the OECD was a large-scale manpower planning effort in six Southern European nations. The framework for the study is discussed by Parnes [27] and there are country reports, of which Turkey [29] and Spain [28] are representative. Hollister [18] has criticized the project for concerning itself too narrowly with educational

planning, at the expense of programming and implementing activities.

With the exception of Bowman and Anderson, who find it totally useless, the critics of manpower forecasting and planning believe that this kind of analysis has a role in decisions about the allocation of resources to and within education and training.

The manpower approach is a unique method of obtaining information that can be incorporated into broader types of analysis; manpower policy should be integrated with overall social and economic policy.

EDUCATION PLANNING MODELS

(i) The question. Education planning models do not attempt to answer a general question; rather, they are designed with specific questions in mind. The complex interrelationships of an education system are simulated, in order to provide a framework for testing the consequences of alternative policies and investment patterns over time. A model can be used to discover which alternative best achieves particular objectives. Models may be designed to generate consistent plans, assess the feasibility or costs of a proposed plan, or point out the bottlenecks to further educational development.

(ii) The technique. All education models share the characteristic of expressing the interrelationships of the education system in algebraic form. This means that all important flows of students, teachers and the services of equipment, textbooks, and buildings are explicitly related to each other in quantifiable ways. For example, the enrollment of sixth graders in 1971 equals the number of fifth graders in 1970 times the progression rate (or

one minus the wastage rate). The progression rate is thus the sixth grade enrollment in one year divided by the fifth grade enrollment of the previous year, and the wastage rate is the sum of the drop-out and failure rates.

Other examples of these specified relationships readily come to mind. The supply of teachers required for a particular grade in a given year is equal to the enrollment in that grade during that year, divided by the appropriate pupil-teacher ratio. Recurring costs per pupil are equal to the total cost of teacher salaries plus textbooks plus materials plus maintenance, all divided by the level of enrollment.

Once the relationships have been stated algebraically it is possible to begin assigning numbers to the various symbols. The purpose of the model will dictate which variables are assigned values, and which will be determined in the solution of the model. Values must be assigned to the parameters, which relate the variables to each other. These numbers may be taken from history, or they may be set by policy. For example, drop-out rates can be those observed historically, or extrapolations of recent trends. Policy decisions could be reflected in, say, pupil-teacher ratios. Solutions to the model can be made subject to constraints on resource use; even social and political constraints can be built into the model, if they can be quantified.

The early educational planning exercises were supply models. Targets were accepted as given (often by independent manpower projections), and the problem they addressed was the investigation of alternative methods of supply. Timbergen, Correa, Bos, and others at the Netherlands School

of Economics were in the vanguard of these efforts. Much of the work which was carried out under Tingerger's [36] direction, however, consisted of the application of pre-existing economic models to the problems of education. In essence, the Tinbergen models investigated the paths followed by key variables in response to changes in assumptions.

The most complete supply model has been developed by UNESCO with the cooperation of ECAFE [37]. It was designed as a tool to aid the Asian member nations in developing educational policy. After specifying, quantifying, and programming the relationships, it became possible to observe the implications of changes in the educational system, almost instantaneously. The costs of new programs became readily apparent, in spite of the long time spans they embraced.

Although they did it in a sophisticated way, these models were only looking at half the problem of allocating resources efficiently in the education sector. They dealt solely with the cost or supply side of the problem, in much the same way as the manpower projections dealt only with the demand side. To be sure, Correa [12] considered both sides of the problem, but even there the first part of his book was devoted to the supply of labor, and demand considerations were postponed until the latter part. The integration of supply and demand into one model had to await more recent developments.

Linear optimizing models have been applied to human resources development planning by Adelman [1], Bowles [6] [7], and Benard [4]. The models used by Benard and Adelman encompass the entire economy, but

they give detailed attention to the education sector.. Using data from Argentina, Adelman's model efficiently allocates investment resources to both education and real capital.. Solution of the model results in the optimal pattern of production, imports, and exports in the several sectors of the Argentine economy over time.. With respect to the education sector, the model determines the number of graduates from each of the various schools, and allocates these graduates to different sectors of the economy, in response to their labor requirements.

In contrast with Adelman's general equilibrium model, Bowles takes the resource flows from the rest of the economy as given, and attempts to allocate those resources efficiently among educational activities. His study of Northern Nigeria incorporates variations in educational policy, such as the increased use of audio-visual equipment, or the introduction of team teaching. Among the constraints on his solutions are politically determined minimum levels of secondary enrollments, and limits on the pace of expansion of facilities.

In order to make decisions about resource allocation, these models require a criterion. Bowles seeks a solution which will maximize the contribution of the educational system to future (discounted) national income. Adelman similarly attempts to maximize the discounted sum of GNP, but in other trials she experimented with maximizing the growth of GNP between a base year and a target year. In another set of runs, she minimizes the discounted sum of net foreign capital inflows, an approach which is of interest to those concerned with foreign assistance. It is interesting to

note that, in the operation of both models, technical and vocational education was a bad investment; the benefits derived from them failed to cover their cost.

Perhaps the most significant aspect of this new approach is its promise as a means of integrating the other techniques of human resources development planning. Not only have demand and supply been brought into the same model, but the work of others has been incorporated.

Bowles has permitted a choice between producing teachers domestically and importing them, an innovation of Tinbergen. To arrive at the productivity of various kinds of education, Bowles calculates rates of return, and then proceeds to assume that these rates will remain constant. Dividing the labor force into three skill categories, Adelman borrows from manpower planners by assuming fixed productivity ratios in each category, and refusing to permit labor in one category to substitute for any other. The output-skilled labor ratios are derived from correlations between education and income. Unlike Bowles, however, her model does not have constant rates of return from each stage of education; the returns are allowed to vary with the relative scarcity of the skills (supply) and the growth of various sectors of the economy (demand). Bowles follows Tinbergen and the OECD in skipping over the differentiation of the labor force by skills. Instead they specify labor by educational attainment.

As other models are developed and enlisted in the search for policy guidelines, this groping toward a synthesis of planning techniques may continue.

(iii) The limitations. Models may become quite sophisticated, but they are only as powerful in generating solutions as the knowledge built into them.

To the extent that the recently developed models synthesize the various techniques of human resources development planning, criticism of the models is criticism of the state of the entire field.

For example, if one argues that Bowles's assumption of perfect substitutability among different kinds of educated labor is unrealistic, one is actually quarreling with the advocates of a fixed rate of return. Studies conducted to date have assumed either no substitution, or perfect substitution among skills. The truth lies somewhere in between, and studies of the elasticity of substitution between skills are clearly required.

The particular objectives which the models maximize are subject to the same lengthy criticism as the rate of return analysis. Since the models use this kind of analysis to determine the desirability of different stages and types of education, they also fail to account adequately for noneconomic social benefits, the consumption aspect of education, external economics and complementarities. Bowles and Adelman, like the other analysts discussed in this paper, find it easier to deal with formal education, and tend to ignore the economic contribution of on-the-job training, in-service programs, and extension activities.

Adelman's investigation of the relation between output and labor differentiated by skill is a fresh approach to the correlation problem. Efforts like this may yet provide a bridge between rate of return analysis and the manpower requirements approach. Further clues may be provided by

inter-firm correlations. More detailed information about the range of possible substitution among skills could be useful as constraints on the perfect substitutability models. Since manpower projections tend to understate the future requirements for skilled workers, they might also be effectively utilized as a constraint, providing a floor on the formation of skills.

Very little is known about the translation of the requirements of producers (labor differentiated by skill) into the composition and number of school graduates. Most studies avoid this problem by specifying labor demanded by the production sector in terms of educational attainments. But just what precisely does an increment of education change in a man? This question is acute enough with respect to how education relates to economically useful skills, let alone how it influences the total man. A greater understanding of the relation between education and development is undoubtedly dependent upon our knowledge of how a person's economic and social activities are transformed by his educational experience.

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Page 4, lines 16-17 should read:

. . . necessarily lead to a greater employment grew more rapidly in East America, and this was associated with the larger employment expansion may to other factors, such . . .

Page 19, line 3 substitute 15% for 1

Page A-1, lines 1-4, item 3 (Nigeria

As shown in Table A-1, unemployed 14 years and over with "professional considered themselves qualified for varied from 17.8% in the Midwestern Region. Nationwide, . . .

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. . . necessarily lead to a greater employment growth rate. Although employment grew more rapidly in East and South Asia than in Latin America, and this was associated with a greater output growth rate, the larger employment expansion may have been due more importantly to other factors, such . . .

Page 19, line 3 substitute 15% for 10%.

Page A-1, lines 1-4, item 3 (Nigeria) should read:

As shown in Table A-1, unemployment as a percent of the population 14 years and over with "professional qualifications," i.e., those who considered themselves qualified for any type of work in the large towns varied from 17.8% in the Midwestern Region to 10.6% in the Northern Region. Nationwide, . . .

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June, 1967

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Unemployment in the Less Developed Countries

I. Introduction

Although difficult to document, there is a consensus that unemployment is both large and increasing in most less developed countries (LDCs). This is true even of many countries which have had fairly rapid GNP growth rates.

Traditionally, unemployment in the LDCs was primarily a rural-agricultural problem which took the form of underemployment. However, in recent years most LDCs have undergone rapid urbanization. While rural underemployment has remained large, much of the increase in unemployment has, therefore, occurred in the large urban centers. There it is manifested as open unemployment as well as underemployment. It is estimated that an open unemployment rate of 10% in LDC cities is not unusual, even during peak periods of activity.^{1/}

As long as the problem was mainly one of underemployment in rural areas, it was generally neglected by the authorities. It could be neglected because the underemployed in rural areas have generally been able at least to eke out a subsistence wage. Moreover, those in the rural areas of LDCs are generally unorganized and do not constitute an effective political force. However, when unemployment spreads to the cities and becomes more open, it also becomes more difficult to ignore. This changed character of LDC unemployment is a major factor in the

1. W. A. Lewis, Development Planning, N.Y.: Harper & Row, 1966, p. 76.
For estimates of unemployment rates for selected LDCs see Appendix A.

TABLE I

GROWTH OF INDUSTRIAL AND MANUFACTURING OUTPUT
AND EMPLOYMENT IN LDCs, 1948-61 (% PER ANNUM)

	<u>INDUSTRY</u>	<u>MANUFACTURING</u>
	A. All LDCs	
Output	7.5	6.7
Employment	3.5	3.5
	B. Latin America	
Output	5.8	5.7
Employment	2.1	2.0
	C. East and South East Asia, except Japan	
Output	7.6	7.8
Employment	3.7	3.7

Source: UN, The Growth of World Industry:
International Analyses and Tables, 1938-1961.

increasing attention being paid by LDC governments and others to employment creation.

In this paper we will attempt to examine the forces responsible for the "new unemployment" and to suggest appropriate LDC policies and U.S. economic assistance policies for dealing with the problem.

II. Employment and Industrialization

One part of the most likely explanation of the unemployment problem is that industry, which is concentrated in the large urban areas, is failing to create enough jobs. It is not that the rate of employment expansion has been low but rather that it has been greatly exceeded by the increase in the supply of labor.

Between 1950 and 1960 for all LDCs the urban population, defined as those living in places of 20,000 inhabitants or more, grew at an average annual rate of 4.6%^{1/}, whereas between 1948 and 1961 employment in industry (manufacturing, mining, electricity and gas), grew at an annual average rate of 3.5%. (Table I). The employment lag was most profound in Latin America where during the same periods the urban population grew at an average annual rate of 5.6%^{2/} and industrial employment grew at a rate of 2.1% (Table I).

Employment has lagged markedly behind the growth of industrial output. As shown in Table I, between 1948-61 for all LDCs, the average

1. Calculated from UN Economic and Social Council, World Survey of Urban and Rural Population Growth, E/CN. 9/187, Mar. 8, 1965.

2. Ibid.

annual rate of growth of industrial output was 114% greater than that of industrial employment, and the growth rate of manufacturing output was 91% greater than that of manufacturing employment. Again, the lag was most profound in Latin America where industrial output expanded at a rate 176% above that of industrial employment, and manufacturing output grew at a rate 185% above that of manufacturing employment.

It may be that industrial output has failed to expand sufficiently. However, the rate necessary to provide an adequate volume of employment may be beyond the capacity of most countries. In many LDCs industrial output is already expanding rapidly. For example, between 1950 and 1960 industrial output grew at an average annual rate of 9.2% in Brazil, 17.4% in Pakistan, 9.9% in the Philippines, 9.6% in Venezuela.^{1/} It is estimated that in Brazil a rate of 12% is needed to absorb only the expected new entrants to the labor force over the next few years. Furthermore, a high rate of output growth per se may not necessarily lead to a greater employment growth rate. Although employment expansion may have been due more importantly to other factors, such as a greater concentration on more labor-intensive products and a slower rise in wages. In Brazil^{2/} and in Venezuela between 1950 and 1960 manufacturing output grew very rapidly (9.2% and 13.0%) but employment

1. UN, The Growth of World Industry, 1938-61: National Tables, ST/STAT/SER.P/2, 1963.

2. The employment rate is for 1949-59.

expanded only moderately (2.6% and 2.1%); while in Peru, output grew only moderately (6.6%) but employment expanded fairly rapidly (4.4%).^{1/}

Perhaps the major reason behind the limited ability of the industrial sector to create new jobs is the nature of the industrialization process in LDCs. In most LDCs, industrialization has taken the form of adoption of fairly capital-intensive production techniques and rapid expansion in the more capital-intensive industries.

Using installed electric power capacity per employed person as a measure of capital intensity, Baer and Hervé found that there have been sizable increases in capital intensity over time in the various LDCs for which they were able to obtain data, and increases have occurred in nearly all branches of manufacturing.^{2/}

For LDCs as a whole, manufacturing output has expanded most rapidly in the more capital-intensive industries. During the 1948-61 period, the most rapid growth in output occurred in paper and paper products (ISIC 27), chemicals and chemical, petroleum and coal products (ISIC 31-32), non-metallic mineral products (ISIC 33), basic metals (ISIC 34), and metal products (ISIC 35-38); with the exception of metal

1. The Growth of World Industry, 1938-61: National Tables. The employment rate for Brazil is from W. Baer and M. H. Herve, "Employment and Industrialization in Developing Countries," Quarterly Journal of Economics, Feb. 1966, p.91.

2. Baer and Hervé, loc. cit., p. 92.

products, these industries are by U.S. standards considerably more capital-intensive than average.^{1/}

The increase in capital-intensity in the LDCs has not been confined to manufacturing; it has occurred in other branches of industry as well. Even construction, while much less capital-intensive than manufacturing,^{2/} has apparently become more capital-intensive with cranes and bulldozers and other labor-saving machinery being substituted for labor.

In part, these developments reflect the ready availability of capital-intensive technologies. The technologies in many lines of industry in the developed countries are capital-intensive. These are often borrowed by developing countries with a minimum of adaptive changes, however inappropriate this may be to their factor endowments.

They may also reflect export prospects, natural resource endowments, the size of national markets, and the pattern of demand. If, for example, an LDC has important mineral deposits, which may require highly mechanized techniques for extraction and processing, it is reasonable that its output-mix should contain products which are fairly capital-intensive.

1. Calculated from UN, The Growth of World Industry, 1938-1961: International Analyses and Tables, ST/STAT/SER.P/3, 1965.

2. The capital-labor ratio for construction is 30% that of the average capital-labor ratio for manufacturing in Japan. Wu Ta-Yeh, "Capital Intensity and Economic Growth in Underdeveloped Countries," Tsing Hua Journal of Chinese Studies, June 1963, p. 235.

Part of the explanation for the preference for capital-intensive techniques and products is the existence of market imperfections which cause the misallocation of resources. These often have the effect of making capital cheaper and labor more expensive than warranted by their relative supplies.

Exchange rates are often over-valued in many LDCs. Therefore, the cost of imported machinery is too low. Furthermore, there may be restrictions on imports of spare parts, raw materials and second-hand machinery which further stimulate imports of new equipment.

The prevailing structure of interest rates often makes it possible for larger enterprises, especially those of the government, to obtain capital at low rates of interest. Foreign assistance is made available to LDC governments on terms which are well below those obtainable domestically. Larger firms and governments may also have access to world money markets where interest rates are considerably lower than domestic rates. Even domestically, the larger borrowers may be able to obtain finance cheaply because of their size and the acceptability of their collateral. Monetary policies which permit unduly large credit expansions and the existence of low ceilings on bank interest rates have the effect of keeping the price of capital low for the larger borrowers. On the other hand, smaller firms and farmers whose operations are less capital-intensive, have difficulty in obtaining credit, and when they do, it is generally at very high interest rates from money lenders.^{1/}

1. See U Tun Wai, "Interest Rates Outside the Organized Money Markets of Underdeveloped Countries," IMF Staff Papers, Nov. 1957, p. 83.

Because of the poor linkage between the organized and unorganized money and capital markets in LDCs, easy money policies do not generally result in lower interest rates for farmers and small firms.^{1/}

Corporate tax laws frequently include provisions for encouraging capital intensity. Accelerated depreciation and investment allowances (writeoffs of more than the cost of the investment), are becoming increasingly common.^{2/}

Industrial wage rates are relatively high and rising^{2a/}. Not only has this tended to increase capital intensity, but it has also contributed toward increasing under-utilization of plant and equipment and augmenting the flow of labor from rural areas to the cities. Instead of the 50% difference between real wages in the modern sector and real income in subsistence agriculture that W. A. Lewis estimates is what is required to bring labor into industry without at the same time attracting "much more than it can handle,"^{3/} average real wages are

1. U Tun Wai, loc. cit., pp. 94-95.

2. Howard Pack, "Public Finance in Underdeveloped Countries: A Survey of Some Problems," AID 1966 Summer Research Program Paper, pp. 13-14.

2a. The importance of high and rising wage rates in accounting for unemployment is illustrated by calculations made for Puerto Rican manufacturing by Lloyd Reynolds. He found that a change in the wage was associated with an approximately equal proportionate change of employment in the reverse direction. L. G. Reynolds, "Wages and Employment in a Labor Surplus Economy," American Economic Review, Mar. 1965, p. 34.

3. Lewis, op. cit., pp. 77-78.



generally 2 to 3 times higher than those in agriculture.^{1/} Real wages have increased much more rapidly than productivity, although one might have expected them to rise less in the majority of LDCs. It is estimated that in Latin America during the 1950's, average real wages rose 4 to 5% per year while real product per capita rose $1\frac{1}{2}\%$ per year, and in Africa average real wages increased 4% per year, while real product per capita rose 1% per year.^{2/}

Legal minimum wages and government salaries are often the basis for industrial wage rates in LDCs.^{3/} Increases in both are fairly frequent. Minimum wages are more likely to be based upon average living standards in urban areas than those of the agricultural sector.^{4/}

Despite the inappropriateness of prevailing prices in LDCs, it is questionable whether profitability and reinvestment are in fact positively and directly associated with the degree of capital intensity. Data for Indian smaller-scale manufacturing establishments show: (1) profits per unit of capital are highest for the least capital-intensive group of firms, but there is no clear relationship between profits per unit of capital and capital intensity for the other groups of firms; (2) profits per unit of output are somewhat higher for the more capital-

1. H. A. Turner, Wage Trends, Wage Policies and Collective Bargaining: the Problems for Underdeveloped Countries, Cambridge Univ., 1965, p. 13.

2. Ibid, pp. 13-14.

3. Ibid, pp. 46-49; Reynolds, loc. cit., p. 28; and C. R. Frank, Jr., "Employment and Economic Growth in Nigeria," AID 1966 Summer Research Program Paper, p. 15.

4. Turner, op. cit., p. 58.

intensive groups than for the less capital-intensive groups; (3) reinvestment per unit of capital is highest in the least capital-intensive group, but there is no clear relationship for the other groups.^{1/} Data for Karachi textile, leather and leather goods, light engineering, and plastic firms, representing 80% of Karachi's industrial capacity, show: (1) profits per unit of capital vary inversely with capital intensity; (2) profits per unit of output are highest for the least capital-intensive group of firms, but there is no clear relationship for the other groups; (3) reinvestment per unit of capital is highest for the group of firms with the next-to-highest average capital intensity; the reinvestment ratio for the most capital-intensive group is less than half that of the next highest capital-intensive group and only slightly greater than that of the least capital-intensive group.^{2/} More research needs to be done, however, before definite conclusions can be reached.

While unemployment of unskilled labor is large and increasing, there is at the same time a shortage of skilled labor. Modern industry requires a substantial number of craftsmen. For example, for Jamaica it has been estimated that mining requires that 25% of the work force be skilled; manufacturing requires from 15 to 25%; communications requires 10%; and construction requires 50%.^{3/} The proportions are probably not too dissimilar in other LDCs.

1. Wu Ta Yeh, loc. cit., pp. 221 and 223.

2. G. Ranis, "Investment Criteria, Productivity, and Economic Development: An Empirical Comment," Quarterly Journal of Economics, May, 1962, pp. 300-302.

3. Lewis, op. cit., p. 226.



III. Employment in the Services Sector

Faced with limited employment opportunities in industry, many of those who migrate to the cities and are unable to find jobs in industry, attempt to obtain employment in the services. It is not surprising, therefore, that there has been a large expansion in the labor force attached to the services sector. Thus, in Latin America, the labor force in the services sector (exclusive of construction and utilities), increased at an average annual rate of 4.1% between 1950 and 1965, compared to 1.2% for agriculture and 2.8% for industry, and its share in the labor force rose from 24 to 30%.^{1/}

But this does not mean there has been a commensurate expansion in productive employment in the services. In the case of Latin America, it is likely that a substantial proportion of the rise in the services sector's labor force represented an increase in underemployment. During the 1950-65 period output per member of the labor force in the services sector declined at an average annual rate of 0.3%.^{2/} The increase in underemployment ascribable to the decline in productivity alone may be estimated as equivalent to about 8% of the sector's labor force.

There is a new school of thought which believes that expansion of employment in the services sector may well be the solution to the employment problems of the developing countries. According to Walter Galenson, who wrote the seminal article expounding these ideas, this

1. Calculated from UN Economic Commission for Latin America, "Structural Changes in Employment Within the Context of Latin America's Economic Development," Economic Bulletin for Latin America, Oct. 1965, pp. 163-187.

2. Calculated from Ibid.



expansion will occur mainly as a result of the growth of manufacturing. Under conditions of modern technology, manufacturing will not be a major source of new employment but it will generate the demand leading to an expansion of employment in the services sector.^{1/}

To support his hypothesis, Galenson does four regressions. He correlates employment changes in manufacturing with those in services for 25 countries and finds that for every percentage increase in manufacturing employment, there is an associated rise of 0.6% in services employment ($R^2 = 0.70$). He also correlates changes in manufacturing output with changes in services employment for 16 countries and finds a much weaker relationship; for every percentage increase in manufacturing output there is an associated rise in services employment of 0.2% ($R^2 = 0.54$). Finally, he correlates manufacturing employment changes with those in commerce and miscellaneous services for 21 countries and finds even poorer relationships; while there is a rise of 0.6% and 0.7% in commerce and miscellaneous services employment, respectively, for every percentage increase in manufacturing employment, the R^2 is only 0.29 for commerce and 0.32 for miscellaneous services.

Upon closer examination of the data, it is doubtful whether Galenson has been able to support his hypothesis. For one thing, the majority of the countries included in his regressions are developed

1. Walter Galenson, "Economic Development and the Sectoral Expansion of Employment," International Labour Review, June, 1963, pp. 505-519.



countries. Of the 16 countries he used for the correlation of manufacturing output with services employment, nearly all are developed. Furthermore, he found that services employment expanded by 1% regardless of change in manufacturing output or employment. In addition, expansion of employment in services, although absolutely larger than expansion of employment in manufacturing, increased less percentagewise than manufacturing employment. It is also questionable to what extent the data purporting to show employment in services actually do represent numbers of employed or are mainly residual estimates of the labor force attached to the services sector.

Finally, Galenson dismisses the likely possibility that many of those in the services sector, because of prevailing low productivity levels, are actually underemployed. He states that: "If people are engaged in activities which enable them to support themselves, it seems difficult to argue that they are not gainfully employed, no matter what one may think of the nature and intensity of their tasks. . . who is to say that seven hours spent in watching a dial which controls an automated line is a fuller day's work than ten hours of walking about in a hot sun seeking to sell trinkets to unwilling and elusive customers. The productivity of the two occupations may be quite different, but comparative productivity does not provide a criterion for degree of employment except in some general and not very meaningful sense."^{1/}

1. Ibid, p. 516.



This view amounts to the denial of the existence of disguised underemployment. Although difficult to measure, there is no doubt that disguised underemployment does exist and is widespread in developing countries. This form of unemployment is mainly a function of comparative productivity. While there are differences of opinion as to what the standard of efficiency for any activity should be and comparative productivity data are hard to come by, an assessment of employment in developing countries must take into account the volume of disguised underemployment.

IV. Employment in Agriculture and in Rural Areas

Another major part of the explanation of the new unemployment problem is that labor is moving out of agriculture and rural areas too rapidly. Urbanization has progressed at a very rapid pace in many LDCs. In general, the urban population has grown more than twice as fast as total population. In major cities an annual rate of population increase of 8 to 10% is not unusual.^{1/}

One reason for the rapid rural-urban migration has already been touched upon in another context above - the abnormally large differential between wages in urban and rural areas. Other attractive forces include centralization of industry and the greater availability of water, transportation, electric power, schools and medical services

1. F. H. Harbison, "The Generation of Employment in Newly Developing Countries," (mimeo draft), p. 17.



TABLE II

AGRICULTURAL WORKERS PER 100 HECTARES OF
ARABLE LAND, 1960

Argentina	4.9
Chile	11.8
Jordan	14.7
Tunisia	18.5
Iran	22.2
Spain	22.7
Mexico	24.4
Venezuela	31.2
Israel	33.3
Turkey	38.5
Poland	41.7
Colombia	52.6
Greece	52.6
Yugoslavia	55.6
Costa Rica	71.4
Brazil	71.4
India	83.3
Pakistan.	83.3
Philippines	83.3
Thailand	111.1
Taiwan	166.7
UAR	166.7
Japan	250.0

Source: "Changes in Agriculture in 26 Developing Nations 1948 to 1963" Foreign Agricultural Economic Report #7, U.S. Dept. of Agriculture.



in large urban centers. In part, the latter attractive forces are the result of concentration of development expenditures in the large urban centers.

The "push" factors responsible for the too-rapid migration of the labor force from rural areas are mainly those connected with the slow growth of agricultural production and employment opportunities in relation to increased population pressure. Often, even in LDCs where agricultural production has increased rapidly, following the pattern of industry, cultivation has been fairly capital-intensive and gains have been concentrated in large-scale commercial farms.^{1/}

The rapid rural-urban migration would appear to be more important than the failure of industry to provide enough jobs in the explanation of unemployment. Industrial employment, which is predominantly urban-based is already expanding at a remarkably high rate. Thus, the 3.5% average annual rate of expansion of LDC manufacturing employment in the postwar period compares favorably with the 3.3% rate of U.S. manufacturing employment during its industrialization period (1870-1920).^{2/}

1. Mexico is a good example. Thus, "to a remarkable degree growth of farm output in Mexico has been concentrated in the semi-arid regions in the north where large-scale commercial operators rapidly expanded production of cotton and wheat as major irrigation made possible expansion of the cultivated area. These enterprises were both technically progressive and highly mechanized." B.F. Johnston, "Agriculture and Economic Development in Japan: Its Relevance to the Developing Nations," AID 1966 Summer Research Program Paper, p. 65.

2. U.S. manufacturing employment rate calculated from N. Potter and F.T. Christy, Jr., "Employment and Output in the Natural Resource Industries, 1870-1955," Studies in Income and Health (NBER), Vol. 25, 1961, p. 121.



V. Population Growth

The third and last major part of the explanation of LDC unemployment is the generally high rate of population growth. Many LDCs have population increase rates of $2\frac{1}{2}\%$ or more and in many instances these rates appear to be increasing. In contrast, with a few exceptions in the case of those with large unsettled areas, the presently advanced countries never had to cope with rates of population increase of this order of magnitude during their development.^{1/}

Even if birth rates could be significantly reduced, unemployment would still be a problem for many years to come. In part, this is because those presently unemployed will be unaffected. Furthermore, the growth of the labor force for some time to come will be dependent upon past birth rates. In addition, rapid urbanization, one of the root causes of unemployment, is only indirectly linked to general population growth.

VI. Policy Recommendations for LDCs

There are many who accept the views of Galenson and Lebenstein that the main goal of LDCs should be to maximize future output per capita rather than present output and employment, and that capital intensity must be maximized in order to achieve this goal. Their argument essentially is that capital intensity increases the proportion of income

1. Harbison, op. cit., pp. 32-33.



going to profits. As a result, savings for reinvestment will be higher and there will be a greater rate of growth.^{1/}

There are a number of weaknesses in this argument. Profits may not necessarily be saved. Taxation can be a source of savings. As we have already seen, it is questionable whether the share of profits in output and the reinvestment rate are positively and directly associated with capital intensity; it may well be that appropriate factor prices would lead to negative correlations. Thus, policies which attempt to maximize present employment may even increase the rate of growth.

More important, however, even if the evidence were to bear out the Galenson-Leibenstein thesis, maximization of future output should not inevitably be the main goal of LDCs. If living standards are already low and unemployment is widespread, maximization of present output and employment may be deserving of greater priority.^{2/} Furthermore, the political and social consequences of a large and growing volume of unemployment, particularly if increasingly manifested in the large urban centers, may be much greater than those from a reduction in the growth rate.

While it is likely that unemployment is large in most LDCs,^{3/} a reordering of development priorities in individual LDCs should be based

1. W. Galenson and H. Leibenstein, "Investment Criteria, Productivity, and Economic Development," *Quarterly Journal of Economics*, Aug 1955, pp. 343-370.
2. Lewis, op. cit., p. 62.
3. See Appendix A for estimates of unemployment rates for selected LDCs.



upon a quantitative assessment of unemployment. A "limited information" procedure for estimating the urban unemployment rate is given in Appendix

B. If the urban unemployment rate, including underemployment, is 10% or more, then alleviation of unemployment should be a primary goal.

The analysis in the preceding sections suggests that while unemployment is increasingly manifested in urban areas, its causes are mainly rural in origin. With industrial employment already expanding at an average annual rate of 3.5% and agriculture typically accounting for more than 2/3rds of the labor force, the solution to unemployment, therefore, would seem to lie more in creating opportunities in rural areas for containing the labor force than in efforts for substantially expanding urban-based industrial employment, although the latter should not, of course, be neglected.^{1/}

It is imperative that most LDCs adopt an agricultural strategy which will not only increase output, but will also create employment opportunities. Given these objectives, the most appropriate strategy for agricultural development would appear to be one patterned after the Japanese development experience.^{2/} The essence of the Japanese

1. This generalization is more applicable to East and South East Asia (excluding Japan) than Latin America. In the former region industrial employment expanded at an average annual rate of 3.7% between 1948 and 1961 and agriculture and related activities accounted for about 70% of the labor force around 1960, while in the latter, during the same periods, industrial employment grew at an average annual rate of 2.1% and agriculture accounted for 47% of the labor force.

2. The discription of the Japanese experience in the text is based upon B Johnston, op. cit., pp. 1-89.



approach is that it consisted of the widespread adoption by the great majority of its farmers of techniques and inputs which are complementary to labor and land. The impressive record of Japanese agricultural performance is mainly attributable to the adoption of labor-intensive cultivation techniques which involve the use of improved seed varieties, fertilizers, pesticides, fungicides, water and simple tools in combination with land and labor. Until fairly recently reliance on capital inputs was very limited.

The potential for expanding employment opportunities in agriculture by adoption of labor-intensive cultivation techniques with yield-increasing inputs is staggering. This may be seen by comparing the labor/arable land ratio for the countries shown in Table II with that of Japan. If, for example, India's ratio of 83 workers to 100 hectares of arable land were increased to 150^{1/} (60% of Japan's ratio) by 1985, after allowing for the absorption of existing disguised unemployment (assumed to be 25% of the number of agricultural workers in 1960), there would be a net increase in agricultural employment of nearly 75 million between 1960 and 1985 which would absorb some 63% of the increase in the total labor force, projected at the rate of the 1950-1960 population increase.

The requirements for implementing this type of labor-intensive development include the following:

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1. Richard Ward thinks that a ratio of 175 workers per 100 hectares is feasible. See R. J. Ward, "Think Piece on Potential Gains from NESAP Agriculture Sectors," AID paper (unclassified), p. 4.



1. more infrastructure, such as access roads to major highways, irrigation and flood control works, and land reclamation projects,
2. adequate rural community services, such as schools and hospitals;
3. expansion of agricultural credit facilities,
4. more warehouses and processing plants,
5. greater availability of fertilizers and other inputs which are complementary to land and labor,
6. more intensive and widespread agricultural education, including extension programs,
7. freeing of product prices,
8. more agricultural research,
9. land reform aimed at inducing large landowners to dispose of their holdings of idle but cultivable land.

Surplus labor in rural areas could be mobilized for the construction and maintenance of rural public works and community development. In addition to their direct employment effects, such projects would also stimulate the development of agriculture and rural-based industry. Programs of this type have been successfully put into operation in several countries. In Morocco, for example, between mid-1961 and the end of 1964, this type of program absorbed about 25% of estimated rural underemployment; in Tunisia, the direct employment impact was even substantially higher.^{1/}

1. J. P. Arles, "Manpower Mobilisation and Economic Growth: An Assessment of Moroccan and Tunisian Experience," International Labour Review, July 1966, pp. 17-18. For Tunisia Mr. Arles states: "Estimating the number of working days 'authorized' under the programme at 50 million, it can be considered that rural underemployment was practically absorbed. But these figures are not completely reliable." (pp. 18-19).

Expansion of rural-based industry and services is another potential source of absorbing rural manpower. Accelerated agricultural development should stimulate the growth of industries which process agricultural products and which can supply agriculture with the requisite physical inputs.

Among physical inputs, fertilizer, in the opinion of many, is the most important because it offers the best hope for rapid increase in agricultural products. On the basis of FAO experience, substantial yield increases of at least 50% are often possible with the single input of fertilizer.^{1/} Yet fertilizer is still little used.

Establishment of fertilizer plants is economically feasible in the larger LDCs.^{2/} However, often even where established, fertilizer plants which have the capacity for meeting domestic agricultural requirements fail to bring about significant increases in fertilizer use. This is mainly due to the high cost of fertilizer. For example, in India the cost of fertilizer is 50% higher than in the U.S.^{3/} Inadequate distribution facilities (transportation and storage) are the principal reasons for the high cost. Improvement in distribution would not only increase

1. D. Hapgood, editor, Policies for Promoting Agricultural Development, Cambridge: MIT, p. 21.

2. For example, the lower limit for economic production of nitrogenous fertilizer is about 30,000 tons of nutrient per year. (UN Food and Agriculture Organization, The State of Food and Agriculture, 1966, p. 125). On the basis of the recommended minimum requirement of 30 lb. of plant nutrient per person per year, a country would have to have a population of at least 2 million.

3. Policies for Promoting Agricultural Development, p. 22.

the use of fertilizer but would also directly increase employment (in the distribution activity). Even in smaller countries, where establishment of a fertilizer plant is not economically feasible, improved distribution facilities would enhance the use of imported fertilizer and also directly increase employment.

The production of small pumps, sprayers, dusters, threshers, and tools and implements for use with animal draft power are further examples of agro-industries which would stimulate the growth of agriculture, and could also directly provide employment for rural manpower. The manufacture of such implements generally does not entail significant economies of scale and hence are suitable even in smaller countries. Furthermore, their production would also make available equipment which is better suited to the needs of agriculture in the LDCs than that which is normally available on import markets.^{1/}

Of course, expansion of agro-industry and services does not imply that this will occur in rural areas. Improvement of rural infrastructure and communities and upgrading the skills of the rural labor force through education would definitely make it more attractive for such industries to locate in rural areas. Perhaps appropriate tax incentives could be used to further enhance the attractiveness of basing agro-industries in rural areas.

Rural development of the type outlined here will obviously require massive public and private investment. The latter is not likely

1. The State of Food and Agriculture, 1966, p. 126.

to eventuate unless the former is forthcoming.^{1/} To some extent the necessary resources can come from the rural areas themselves, but it is both unfair and unrealistic to assume that rural areas can carry the major burden. In many LDCs rural production is already heavily taxed by explicit or de facto taxes on exports and by tariff protection and import restrictions, and the revenues are used primarily for strengthening urban areas. In Ghana, Nigeria, and Uganda, for example, a substantial part of the proceeds from agricultural exports has been diverted by marketing boards or by export taxes to financing urban infrastructure and industrial expansion. Even more widespread have been the policies of LDCs to protect domestic industries by tariffs, import restrictions and multiple exchange rates. These have often had the effect of turning the terms of trade against agriculture.^{2/} What is required is an increase in urban taxation and a more equitable distribution of government expenditures.

Employment opportunities in urban as well as in rural areas might expand if a system of "shadow prices", which approximate those reflective of true factor scarcities, were substituted for prevailing factor prices. Calculation of shadow prices poses some difficulties, but implementation poses even more formidable problems. However, unless they are implemented, their calculation becomes a mere academic exercise, since decisions will continue to be made on the basis of prevailing prices.

1. Harbison, op. cit., p. 26.

2. Johnston, op. cit., p. 55.

In general, the least effective implementation measures are direct controls, such as the licensing of machinery and the fixing of prices and wages by decree or law. The inadequacies of bureaucratic machinery for administering direct controls and the ingenuity of people in getting around them are well known. Hence, the main reliance for implementing shadow prices should be on indirect measures, such as monetary, fiscal and foreign exchange policies and minimum wage regulations.

In choosing indirect measures to implement shadow prices, those measures which are either very costly in terms of their budgetary burden or which tend to perpetuate price distortions should be avoided. An often proposed measure which should be avoided for both these reasons is a subsidy to industrial wages sufficient to make it profitable for employers, including the government, to use labor-intensive production techniques.

There are various indirect measures which would improve the allocation of resources without tending to perpetuate price distortions and which are not costly. The cost of capital for larger borrowers may be increased by tighter monetary and fiscal policies, devaluation and removal of tax incentives for investment, such as accelerated depreciation and tax writeoffs for new plants or equipment. At the same time, the cost of capital might be reduced for smaller, more labor-intensive enterprises and farms by making their loans re-discountable at the Central Bank, by the adoption of more liberal lending policies towards them by development banks and other lending institutions under government control

or influence, by the creation or expansion of credit institutions which specialize in loans to smaller firms and farms, and by the removal of restrictions on imports of second-hand machinery. Urban wages could be held in check by a tighter rein on government salaries and by basing minimum wages mainly on agricultural incomes.

Industry in LDCs is too dependent upon the capital-intensive technologies developed by and for the advanced countries. Some \$7,500 million of equipment is imported annually by the LDCs which is designed primarily for the needs of the advanced countries.^{1/} Yet little engineering and scientific research for developing labor-intensive and capital-saving technologies appropriate to the needs of the LDCs has been undertaken.^{2/} LDC governments should encourage their own development agencies and research institutes to undertake this type of research. They should also press for the establishment of an international agency which could become the focus of research and a repository of information.^{3/}

Development of small-scale industry should be encouraged. In general the labor-absorptive capacity of smaller firms is substantially greater than that of larger firms because capital-intensity is in part a function of size of output. However, small-scale industry may be

1. J. E. Stepanek, Technologies Appropriate for Industry in the Developing Countries, UN Economic and Social Council, STD/5/RPCA/IND/1, Mar. 9, 1966, p. 8.
2. E. Staley and R. Morse, Modern Small Industry for Developing Countries, N.Y.: McGraw Hill, 1965, pp. 288-290.
3. A similar recommendation is made by ILO experts. See ILO, Employment and Economic Growth, Geneva, 1964, pp. 150-151.

appropriate not only in small countries but also in some activities in large countries where markets are fragmented by inadequate distribution facilities. Other advantages of small-scale industry include mobilization of local savings which would otherwise not be productively used, better utilization of handicraft skills, and a shorter gestation period. Provision of adequate credit facilities and establishment of a small industry advisory service for assistance in selecting lines of activity and production and management counselling would help to promote its growth.

Training of unskilled labor could help to alleviate unemployment as well as to help reduce the shortage of skilled industrial workers. It is now recognized that the quickest and most efficient training is on-the-job training.^{1/} Yet, on-the-job training and apprenticeship programs are scanty in most LDCs.

Government enterprises could undertake training programs and pay wages to trainees equivalent to the minimum wage of unskilled labor during the course of their training. The number and scope of on-the-job training programs in private industry could be increased if the employers were offered appropriate tax incentives. The tax incentives need not be very large because businessmen themselves presumably are directly interested in increasing the number of skilled workers on their payrolls. While such programs may be costly, the often-suggested alternative of expanding

1. F. H. Harbison, "Human Resources Development Planning in Modernising Economics," International Labour Review, May 1962, pp. 445-448 and C. A. Anderson and M. J. Bowman, "Commentary on AID Educational Manpower Programs in Africa," prepared for AID, pp. 78-92.

vocational schools is likely to be even more costly and less efficient. In many instances, training in vocational schools is of poor quality, in part because potentially competent instructors find it more remunerative to work in industry and also because it is difficult to tailor curricula to the occupations which trainees later enter.

It is clear that population-control policies are very much needed in most LDCs; many LDC governments have attempted to pursue such policies. Perhaps now with the availability of the intra-uterine coil and improved oral contraceptives these policies will be more successful than they have been. Again, however, it should be noted that even successful population-control policies will have little if any impact on those presently unemployed, those likely to become unemployed in the near future, and urbanization. Hence, a strong population-control policy is no substitute for policies which are directed toward alleviation of the other causes of unemployment.

In order to design adequate policies for alleviating unemployment, and to monitor the effectiveness of these policies the government should conduct at frequent intervals labor force surveys. These should yield statistically valid information on employment and unemployment (including underemployment), by sector (i.e., industry, services and agriculture) and by regions (including urban v. rural).

VII. The Role of U.S. Economic Assistance

With few exceptions, reduction of unemployment has not been a primary goal of U.S. country assistance programs. However, it

is likely that because of U.S. and other foreign economic assistance, employment in LDCs is greater than what it would have been otherwise. Perhaps a substantial increase in the levels of assistance would enable many LDCs to increase employment as well as to accomplish other objectives, but it is unrealistic to assume that aid increases will be forthcoming.

Therefore, it is necessary to decide whether alleviation of unemployment should be a primary goal of U.S. assistance, and if it should, how should assistance be redirected to accomplish this goal.

The first requirement is an assessment of the extent of unemployment in individual aid-recipient countries. If the estimated urban unemployment rate, including underemployment, is 15% or more, then the country has a serious unemployment problem.^{1/} Reduction of unemployment, then, should be one of the main economic goals of U.S. foreign assistance. U.S.-supplied resources and U.S. influence on LDC policies should be redirected toward employment creation.

The following are some suggestions for increasing the effectiveness of U.S. economic assistance for achieving this goal:

1. Greater use of program loans.

The most important advantage of program loans is that they enhance the ability of the U.S. to negotiate for a comprehensive set of self-help measures. Partially in recognition of the leverage potential of program loans, AID has increasingly resorted to program loans in recent years. Thus, eight of the nine major U.S. aid-recipients

1. See Appendix B for a suggested "limited-information" procedure for estimating the urban unemployment (including underemployment) rate.

receive program assistance; for most of these countries, program assistance is much greater than the total amount of project aid. However, the total number of countries receiving program assistance is still very small.

Explicit performance commitments are increasingly being required by AID as conditions for granting program assistance. Some of these, such as monetary ceilings, exchange reform and import liberalization are also relevant to alleviating unemployment. Additional performance commitments which would further the goal of reducing unemployment include the removal of tax incentives for substituting machinery for labor, the removal of prohibitions against imports of second-hand machinery, ceilings on government salaries, minimum wage regulations based upon rural living standards, and most important, the allocation of more budgetary support to agricultural and rural development.

2. More assistance to agriculture.

Since agriculture is one of the President's three new initiatives in U.S. economic assistance, more resources are already being devoted to agriculture and more are planned for coming years. Wherever possible, negotiations for agricultural assistance should relate to the total development efforts in this area, rather than negotiations on a piecemeal basis which consider each form of assistance separately. The new vehicle of the sector loan would seem to be a desirable umbrella for covering most forms of agricultural assistance. Specific performance commitments conducive to the development of a widespread labor-intensive agriculture should be attached to these sector loans.

The construction of rural infrastructure would be stimulated if the U.S. could negotiate more PL 480 Food-for-Work Programs. Major programs have helped to finance the construction and repair of roads, schools, irrigation works, and other public works in rural areas in Korea, Morocco, and Tunisia.

3. On-the-job vocational training.

As with agriculture, education is also one of the new initiatives, and it is receiving more emphasis in AID programs. Most of U.S. aid which has been thus far extended for vocational education has been aimed at strengthening formal vocational schooling. However, as previously indicated, this is not a rapid nor efficient way of upgrading the skills of the industrial labor force. Assistance in this area should be redirected towards extending on-the-job vocational training.

4. More project assistance to rural-based industry.

5. More project assistance to small-scale industry.

6. More loans for local cost financing.

The U.S. should attempt to encourage LDCs to undertake more projects which are relatively labor-intensive by increasing the amount of its local cost financing. LDCs would, of course, have an incentive to present the U.S. with more labor-intensive projects if a substantial proportion of local costs were financed by the U.S.

In FY 1966, lending for local cost financing accounted for 18% of AID's project loans. As a result of the implementation of the

President's new initiatives, it is likely that this proportion will rise. But U.S. loans for local cost financing should also extend to projects outside of the area of the new initiatives.

7. Technical assistance for the establishment and maintenance of labor force surveys for providing current data on employment and unemployment.

8. Research on technologies appropriate to the needs of LDCs.

The U.S. should make research grants available to LDCs and American universities and research institutions for this purpose. It should also press for the establishment of an international center which could become the focus for research and a repository of information in this field.

Unless otherwise indicated, unemployment does not include underemployment.

I. Africa

1. Egypt

From 1957-1960 unemployment as a percent of the labor force remained around 4-5%. It declined to 3.2% in 1961 and 1.8% in 1962,^{1/} primarily as a result of the enforced reduction in the nominal work week in nationalized industries (from 48 to 42 hours).^{2/}

2. Morocco

In 1960 (census) 9.4% of the labor force was unemployed.^{3/}

3. Nigeria

As shown in Table A-1, unemployment as a percent of the population 14 years and over with "professional qualifications", i.e. those who considered 17.8% in the Midwestern Region to 10.6% in the Northern Region. Nationwide, the average was 12.6%. The figures understate the open employment rate since the labor force is smaller than the population 14 years and older who are qualified to work.

II. Asia

1. Ceylon

In 1959-1960 unemployment accounted for 10% of the labor force. The urban unemployment rate was 14% and the rural unemployment rate was 10%. The unusually high rate of rural unemployment is due primarily to the relatively higher proportion of the rural workers who are wage earners.

Eighteen percent of those working less than 40 weeks in rural areas indicated that they were available for extra work and 12% of those in urban areas.^{4/}

2. India

According to Plan estimates, unemployment increased from 3.5 to 5.1% of the labor force between 1956 and 1966. Underemployment, defined as those who had some work but were willing to take up additional work, constituted 10-11% of the employed in 1961.^{5/}

Table A-2 summarizes the available data on urban unemployment. What is surprising is that urban unemployment was less than 5% in 1958/59 in even the largest cities, and that between 1955 and 1958/59 the unemployment rate declined. It is likely that the extent of unemployment is

1. International Labour Office, Yearbook of Labour Statistics, 1965.
2. B. Hansen and G. A. Marzouk, Development and Economic Policy in the UAR, Amsterdam: North-Holland, 1965, pp. 134, 279, 298.
3. U.S. Department of Labor, Labor Developments Abroad, October, 1964.
4. International Labour Office, Employment and Growth, 1964, pp. 23 and 29.
5. These are estimates based upon figures contained in the second, third and fourth Five-Year Plans.

TABLE A-1

RESULTS OF 1963 UNEMPLOYMENT SURVEY
IN LARGE TOWNS OF NIGERIA

Region	Estimated Total Population 1963	Per cent of Population Covered in Survey	Population 16 Years or Over in Survey	Unemployed 14 Years or Over in Survey	Per cent Unemployed	Estimated Total Unemployed
Lagos	577,000	0.5	1,744	270	15.5	50,776
Northern Region	731,810	1.5	6,870	741	10.6	45,539
Eastern Region	527,600	1.2	3,719	655	17.6	60,723
Western Region	1,564,140	0.7	6,591	664	11.6	86,336
Mid-Western Region	155,180	1.0	885	158	17.8	16,080
All Regions	3,555,730	0.9	19,809	2,488	12.6	259,454

Source: Reproduced from C. R. Frank, Jr., "Employment and Economic Growth in Nigeria," 1966 AID Summer Research Program Paper, Table 14.

very much understated by the figures in the table. This is because a large proportion of the employed are in services, where underemployment is generally higher and because the labor force participation rate is low. Certainly the magnitude of the trend is exaggerated and perhaps also the direction of the trend is misrepresented by the figures because the proportion of those employed in the services rose, the labor force participation rate declined, and the Plan estimates indicate a rise in the national unemployment rate.

3. Pakistan

In 1955, according to a special manpower survey, unemployment in the large towns constituted 10.3% of the labor force in East Pakistan and 6.4% in West Pakistan.^{1/} It is estimated that the national unemployment rate, including underemployment, was 20% of the labor force in 1965.

4. The Philippines

During the period 1957-63, according to labor force surveys, the unemployment rate fluctuated between 7.5-8.5%.^{2/} In November, 1958, the unemployment rate in agriculture was lowest (3.2%) and highest in construction (13.2%); the unemployment in manufacturing was about double that of agriculture (6.1%).^{3/}

In April 1966, visible underemployment, defined as those employed but working less than 40 hours per week who want additional work, constituted 33% of those working less than 40 hours per week in agriculture and 41% of those working less than 40 hours in non-agricultural activities. Invisible underemployment, defined as those working more than 40 hours per week who want additional work, accounted for 20% of those working more than 40 hours per week in agriculture and 14% of those working more than 40 hours per week in non-agricultural activities.^{4/}

III. Latin America

1. Caribbean Countries

In British Guiana, Trinidad, Jamaica "and some of the islands of the Caribbean" unemployment is of the order of 10-20% of the labor force.^{5/}

2. Chile

Unemployment as a percent of the economically active population rose from 3.6% in 1952 to 7.1% in 1960 (census dates).

1. International Labour Review, October, 1962, p. 379.

2. U.S. Department of Labor, Labor Developments Abroad, October, 1965.

3. International Labour Review, October 1962, p. 386.

4. U.S. Department of Labor, Labor Developments Abroad, October, 1965.

5. Employment and Economic Growth, p. 24.

TABLE A-2 URBAN^{1/} UNEMPLOYMENT IN INDIA

A. May - November 1955			
	<u>Unemployment Rate</u> (% of Labor Force)	<u>Labor Force</u> <u>Participation Rate</u>	<u>% Of Gainfully Employed</u> <u>in Services^{4/}</u>
All Urban	5.31	34.26	44.52
Largest Cities ^{2/}	8.30	38.30	60.44
Cities with Population of 300,000 or more ^{3/}	5.95	33.61	50.65
All other	4.67	33.78	40.14
B. July 1958 - June 1959			
All Urban	3.59	32.95	46.60
Largest Cities ^{2/}	4.58	36.00	62.43
Cities with Population of 300,000 or more ^{3/}	3.93	31.77	54.46
All Other	3.35	32.74	42.66

SOURCE: India National Sample Surveys - Reports 62 and 85.

- 1/ Urban - cities with population of 5,000 or more.
- 2/ Largest Cities - Bombay, Calcutta, Delhi, and Madras.
- 3/ Also capitals of former part A & B states, excluding Shillong.
- 4/ Services includes trade and commerce, transportation, storage and communications, and miscellaneous.



The unemployment rate in Santiago in 1960 (census date) was 8.3%.^{1/} Labor force survey figures for Santiago show a rise in unemployment from 7.0% in October, 1956 to 9.5% in June, 1958; a decline to 5.1% in 1961; and a rise to 6.1% in March, 1965. It is likely that the unemployment figures understate the open unemployment rate because the census rate was 1% point higher than the survey rate for the comparable date (June, 1960). It is also likely that the trend is actually upwards because the proportion of the employed work force in services rose from 40 to 45% between 1958 and 1963.^{2/}

3. Honduras

In April, 1961, (census) unemployment accounted for 7.8% of the economically active population.^{3/}

4. Panama

Between 1950 and 1960 unemployment rose from 9 to 11% of the labor force (census).

Using a different definition of unemployment which gives a larger volume of unemployment than the census definition, labor force surveys for metropolitan areas show a rise in the unemployment rate from 9 to 12% between 1963-1965.^{4/}

5. Puerto Rico

Unemployment as a percent of the total labor force declined from 14.3% to 11.0% between 1955 and 1965.^{5/} In light of "Operation Bootstrap" and the very large migration of Puerto Ricans to New York City, it is surprising that the unemployment rate is still so high. Also the magnitude of the decline is exaggerated because 67% of the gross new employment created during this period was in the services sector.^{6/}

6. Venezuela

The unemployment rate is estimated at 15% of the labor force in recent years.^{7/}

1. B. H. Herrick, Urban Migration and Economic Development in Chile, Cambridge: M.I.T., 1966, pp. 64-65.

2. Yearbook of Labour Statistics, 1965.

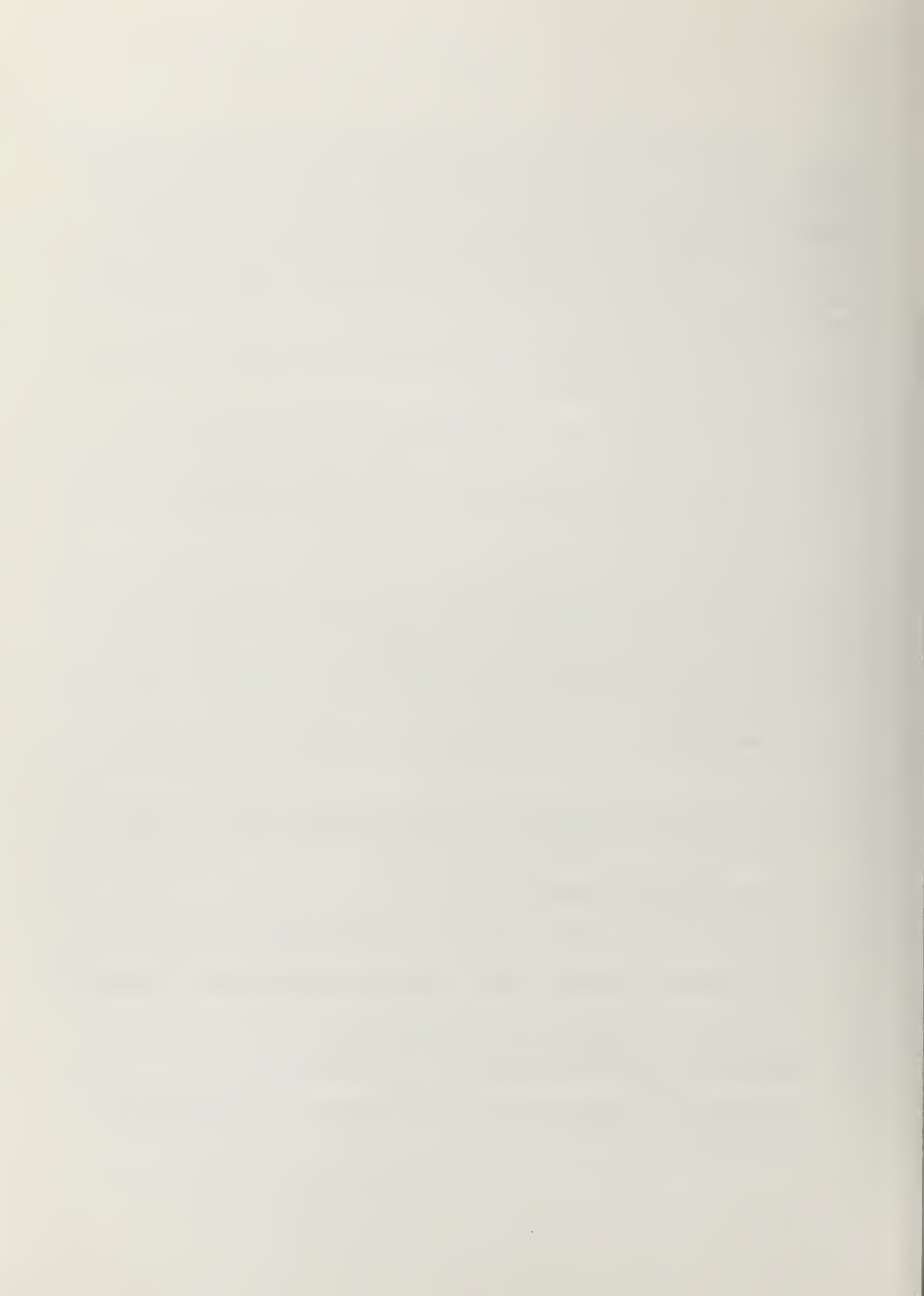
3. U.S. Department of Labor, Labor Developments Abroad, November, 1963.

4. A.I.D. Capital Assistance Paper: Panama Special Program, (unclassified).

5. Calculated from Yearbook of Labour Statistics, 1965.

6. Employment in agriculture decline during the period.

7. F. H. Harbison, "The Generation of Employment in Newly Developed Countries" (mimeo), p.1.



APPENDIX B

SUGGESTED PROCEDURE FOR ESTIMATING THE URBAN EMPLOYMENT RATE

This is a "limited information" procedure which assumes that current data on industrial employment are available and that there have been at least two postwar censuses of population (including information on the economically active population.)

1. Determine the rate of growth of urban population between the most recent census years. (For this purpose, urban areas are defined as those with population of 20,000 or more.)

2. Determine the rate of growth of the economically active population (or labor force) outside of agriculture between the most recent census years.

3. Determine the rate of growth of the economically active population in construction and services between the most recent census years.

4. Multiply the economically active population outside of agriculture as given by the most recent census by a factor which represents the proportion of the non-agricultural labor force in urban areas. In the absence of relevant individual country information, it is suggested that a factor of .85 be chosen. This represents our estimate of the likely urban concentration of the non-agricultural labor force in the typical LDC.

5. Project (4) to the current year by applying the rate of growth of urban population. The result is the estimated urban labor force.

6. Multiply the most recent census data on economically active population in construction and services by (a) a factor which represents the proportion in urban areas and (b) a factor which represents the proportion which is not openly unemployed and underemployed. In the absence of relevant individual country information it is suggested that for (a) a factor of .85 be used and for (b) a factor of .75 be used.

